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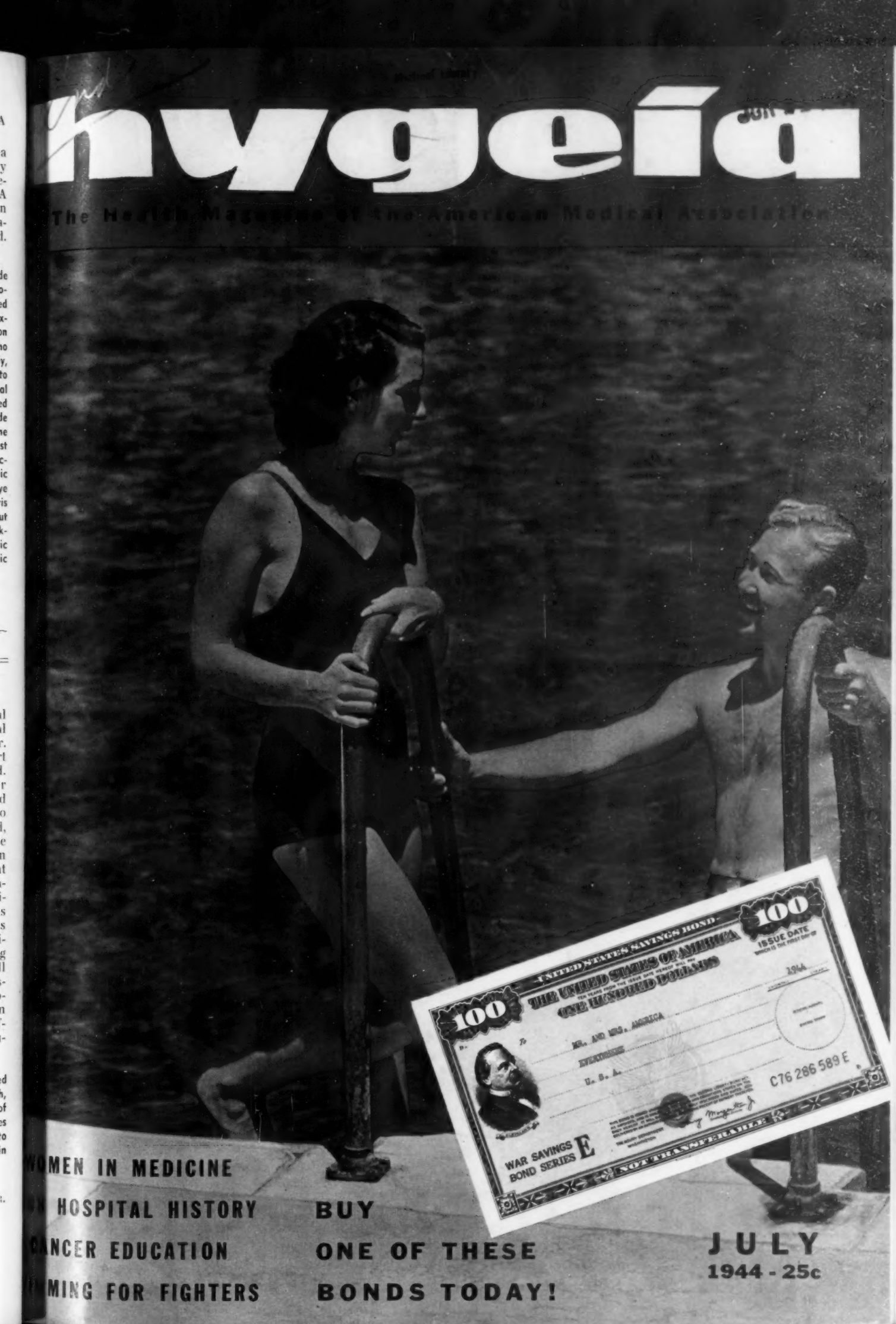

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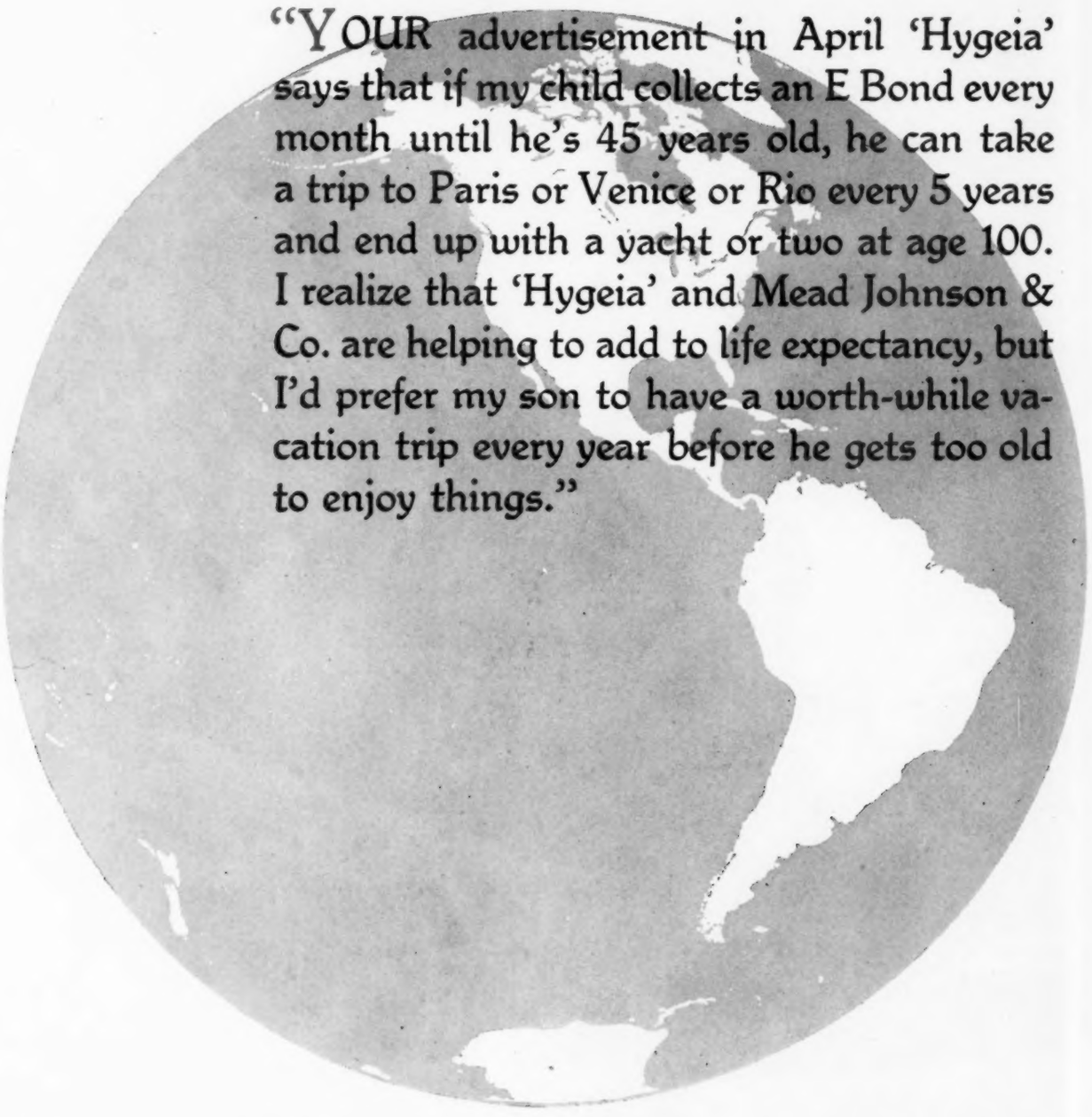

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The Doctors Convene

—An Editorial by MORRIS FISHBEIN

MORE than 55,000 doctors formerly in civilian life are now with the armed forces of our country. Most of the remaining physicians are actively in practice here in the United States, maintaining the health of the nation at a point even better than it was in peacetime.

Every one knows that our doctors have been giving twenty-four hour service to the people. They work from ten to fifteen hours each day, and they are on call most of the night. Nevertheless, some 10,000 of them took leave of their duties and obligations in the communities which they serve during the week of June 12-16 to attend the Annual Session of the American Medical Association in Chicago. On those who remained at home rested the extra burden of caring for the patients of those who were able to go to the scientific meetings.

Doctors attend the annual session of the American Medical Association primarily to bring themselves abreast of the great advances of medical science that have occurred during the year. Already many of our soldiers abroad have become infected with tropical diseases, some of them sent home to make the final recovery. American physicians must bring themselves up to date on such subjects as malaria, infectious diarrheas and infestation with tropical parasites like the filaria. The other advances that have been made in giving blood plasma, the sulfonamide drugs and penicillin are important for the health of all of us. By the use of these technics, conditions like shock, meningitis, pneumonia and the venereal diseases have been robbed of their terrors. Yet doctors must learn how and when to give these drugs and how much of each of these curative agents may be needed in any particular case.

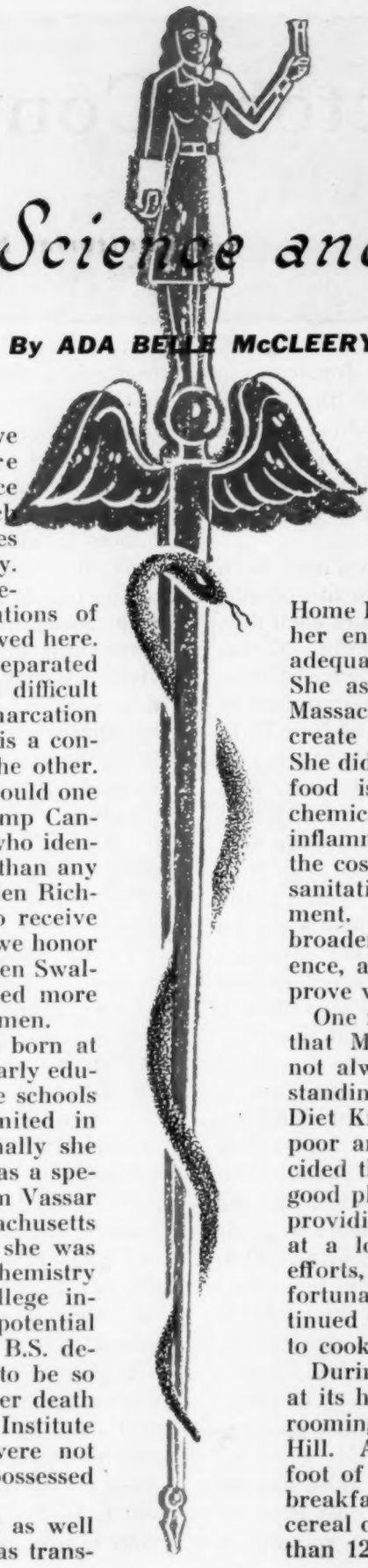
Again the World War has placed on human beings everywhere, including not only those in the armed forces but those who remain at home in industry and in other civilian occupations, stresses and strains such as have never before been inflicted on mankind. Several special sessions of the annual meeting of the American Medical Association dealt with the problems of neuroses and mental disturbances incident to the war.

Weakness and fatigue, surveys of the health of the nation as revealed by the Selective Service examinations, outbreaks of rheumatic fever and jaundice, the proper uses of the vitamins, new technics for painless childbirth, new surgical operations providing success in instances where failure was formerly most frequent, the health problems of industry, the viruses, cancer, the Kenny method for infantile paralysis—these are just a random selection of the topics of more than three hundred papers read at this great convocation of medical scientists, mostly from the United States but with visitors representing all the world.

To one great military medical session came delegates of all the United Nations, including Lt. Gen. Robert K. S. Lim of the Chinese Army Medical Administration and Dr. Vladimir V. Lebedenko of the Red Cross and Crescent of the U. S. S. R.

In two of the great Chicago hotels exhibitions with hundreds of exhibitors demonstrated not only the vast armamentarium of modern medical practice, including drugs and biologic preparations and foods and vitamins and instruments and hospital supplies, but also the results of recent research carried out in the laboratories of our great universities and investigative institutions.

If your doctor was away during the second week of June, you will know that he was not really taking the rest and recreation that were his due for the service that he is rendering in these trying times—he was merely fitting himself to be the best possible doctor for you and your family and your community.



Women in Science and Medicine

By ADA BELLE McCLEERY

PROBABLY no doors have opened to women more slowly than those of science and medicine—a fact which makes recognition, when it does come, all the more noteworthy. Many women in these fields deserve honor, but the contributions of only a few persons can be reviewed here. Science and medicine are not separated in the discussion because it is difficult to draw a clear line of demarcation between the two; rather, there is a constant infiltration from one to the other.

Where should one begin? Should one be more interested in Annie Jump Cannon, the Harvard astronomer, who identified and classified more stars than any one else in the world, or in Ellen Richards, one of the first women to receive a degree in science? Although we honor Annie Cannon, the career of Ellen Swallow Richards is probably related more directly to the lives of most women.

Ellen Henrietta Swallow was born at Dunstable, Mass., in 1842. Her early education was irregular because the schools of the neighborhood were limited in what they had to offer, but finally she was enrolled at Vassar College as a special student. She graduated from Vassar in 1870 and went on to the Massachusetts Institute of Technology, where she was admitted to the department of chemistry on the recommendation of college instructors who recognized her potential ability. She graduated with a B.S. degree in 1873—the first woman to be so honored, and from 1876 until her death she served as a member of the Institute faculty. Her early teachers were not mistaken when they said she possessed capacity for development!

As a student she was earnest as well as brilliant. Her earnestness was translated into a desire to make practical applications of her laboratory findings; she sought constantly for avenues through which her knowledge might be disseminated. She was the founder and first president of the American Home Economics Association. She threw her energies into the establishment of adequate lunches for school children. She assisted in the sanitary survey of Massachusetts waters, thus helping to create a nationwide pure water supply. She did research on the manner in which food is affected by heat. She made chemical analyses of groceries, and of inflammable oils. She wrote books on the costs of living, on various phases of sanitation, and on controlled environment. She was always interested in broadening the sphere of women in science, and by her own work she helped prove woman's ability.

One might take courage from the fact that Mrs. Richards' experiments were not always successful. One of her outstanding failures was the New England Diet Kitchen. She was aware that the poor are often undernourished and decided that her home city, Boston, was a good place to begin to help the poor by providing well cooked, nourishing food at a low price. Largely through her efforts, the Kitchen was established. Unfortunately for the project, the poor continued to buy the food they wanted and to cook it in their own way.

During the period this experiment was at its height I spent a month in Boston, rooming in one of the old houses on the Hill. Almost invariably, I went to the foot of the Hill, to the Kitchen, for my breakfast. There I was served fruit, cereal or toast, and coffee—for not more than 12 to 14 cents. Being poor at the

time, I benefited, though probably I did not belong to the group Mrs. Richards hoped to uplift! The failure of this well intentioned plan is one of many illustrations of the necessity for creating a feeling of need among those who are expected to benefit before attempting any drastic change.

Gradually Mrs. Richards' reputation spread. She was honored by colleges and by learned societies. Yet at the same time she maintained with her husband, Robert H. Richards, head of the department of mining engineering at Massachusetts Institute of Technology, a home distinguished for its hospitality.

Those of us who remember the grocery stores of open bins and the limited winter diet of the same era should be interested in Mary Engle Pennington, a chemist, who resembled Mrs. Richards in her yearning to have others profit from her education. The greater part of her academic training was divided between the universities of Pennsylvania and Yale. At both schools her mental capacity was acknowledged. Her resourcefulness was demonstrated when she created her own first position by establishing a clinical laboratory in which she made analyses for doctors practicing in Philadelphia. She remained in Philadelphia for several years, serving as director of the chemical laboratory at the Woman's Medical College and of the bacteriologic laboratory of the Department of Health and Charities. Later she was for many years head of the food research laboratory of the Bureau of Chemistry, United States Department of Agriculture.

Miss Pennington's special interest was the preservation of perishable foods. It was she who set in motion many forces that resulted in the high quality food products available today. Her investigations ranged from push-cart ice cream to refrigerator cars. She inaugurated dairy inspection, set standards for the grading of eggs, developed the formula for cold storage chickens by installing the "brain pierced, dry plucked, dry packed" method. During the first world war, the rapid moving of great quantities of perishable foods became imperative. Miss Pennington was asked to investigate the ability of the railroads to perform this task. She found that only 3,000 of the 40,000 refrigerator cars owned by the railroads had sufficient air circulation and adequate insulation to carry meat safely. With her help, official standards for such cars were set which for all practical purposes are those in use today.

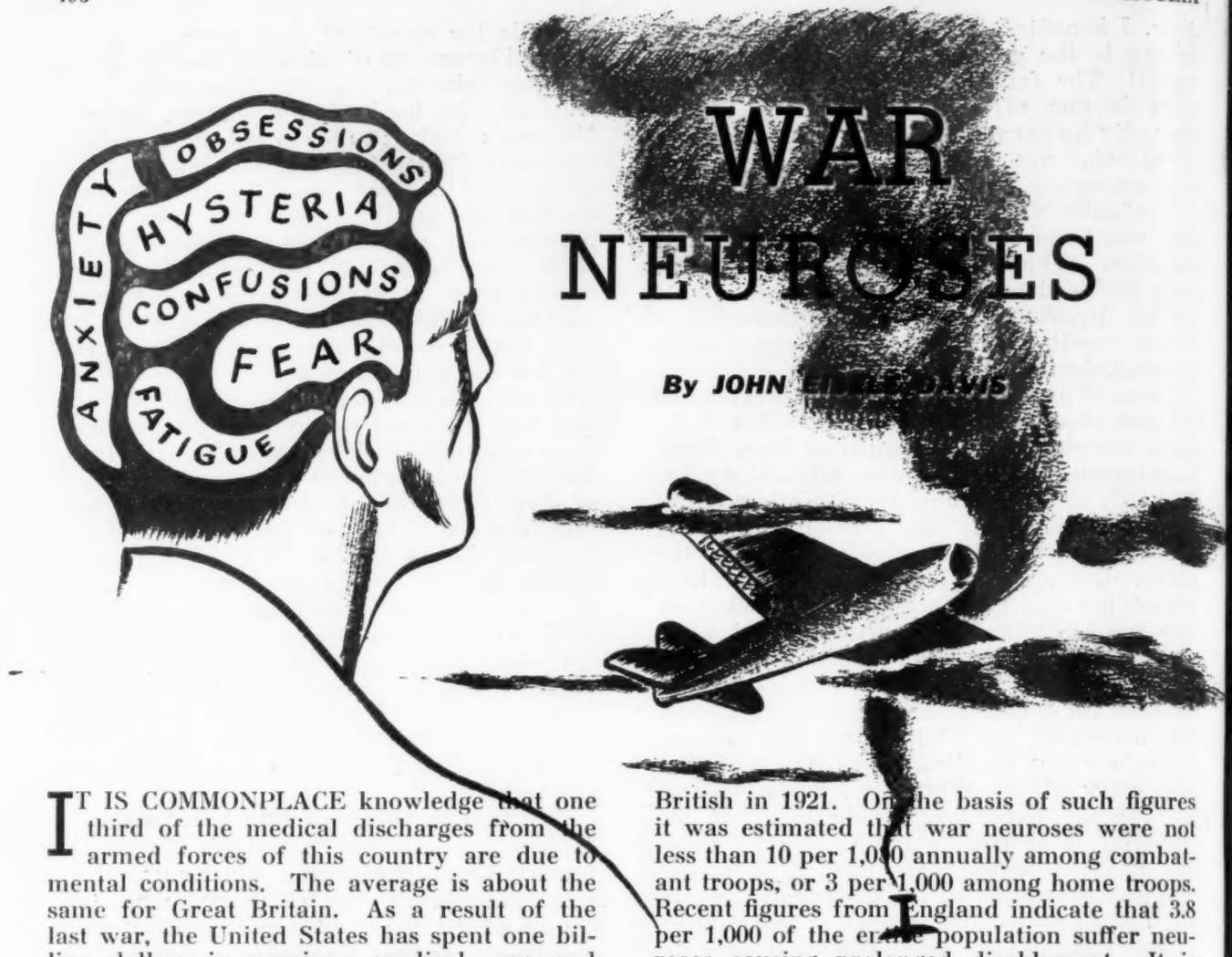
Born in 1872, Miss Pennington is no longer young except in spirit. She does not believe that all food problems have been solved nor food possibilities discovered. She still faces front.

While the secrets of food were being discovered by one set of scientists, another group, the psychologists, was attacking other problems affecting the health of workers. Because "woman's work is never done" the experience of Lillian Moller Gilbreth, a member of this group, is of interest. Mrs. Gilbreth, now president of Gilbreth, Inc., consulting engineers in management, was born in Oakland, Calif., in 1878. Her bachelor's and master's degrees were earned at the University of California, and her Ph.D. at Brown University; her Phi Beta Kappa membership attests the fact that she was not a dull student.

In 1904 she married Frank Bunker Gilbreth and until his death twenty years later collaborated with him in investigating industrial psychology. They believed that an effort should be made to find the one best way of doing anything that had to be done and thereby to derive "satisfaction not only in the result but also in the doing." The Gilbreths held that time is too valuable to be wasted and that time would be saved if excessive motions were eliminated; that there were ways whereby unnecessary fatigue could be reduced; and that to be efficient the worker must be happy in his work. Faith in these theories was their incentive for making exhaustive studies on time, motion and fatigue.

During the summer of 1919 I was a student at Teachers' College, Columbia University. One day the instructor in institutional management introduced Mrs. Gilbreth, who took charge of the class. She told us about using a stopwatch to time a certain procedure before breaking it down for study. Often, then, the position of the worker or the height of his stool was changed and the materials were reassembled for another stopwatch check to determine the time required to complete the job under the new conditions. Fewer motions consumed less time, so an increased output was the result of these early studies. I recall also that she stressed fatigue and its influence on the quality of work, contrasting both quality and productivity of workers who had rest periods at frequent, regular intervals with those who worked without interruption.

Perhaps it is because Mrs. Gilbreth is the mother of eleven children that she sees how leadership naturally falls to those who show themselves able to take responsibility. This may account, too, for her conviction that when more than one person is involved in a project the biggest problem of all is that of the human being; in part, at least, this must have stimulated her studies of the psychologic factors that concern the industrial worker. The death of her husband did not stop Mrs. Gilbreth's work; even a super- *(Continued on page 532)*



WAR NEUROSES

By JOHN [illegible] DAVIS

IT IS COMMONPLACE knowledge that one third of the medical discharges from the armed forces of this country are due to mental conditions. The average is about the same for Great Britain. As a result of the last war, the United States has spent one billion dollars in pensions, medical care and maintenance of special institutions for the care of the mentally ill. The average cost of a mental casualty was $60,000 in the first World War.

War neuroses present a challenging problem today. The more serious types of mental disorder, known as psychoses, appear to be little affected by war, showing little if any increase beyond the previous level of expectancy. On the other hand, milder forms known as neuroses show a definite increase. War neurosis is not a new disease; rather, it represents the appearance of previously existing nervous tendencies brought to the surface and organized, in many cases, as a protection against the severe demands of a war dominated society.

A history of the first world war published in London states that nervous diseases (neuroses), in a sample of 1,043,653 men, occurred in 34 per 1,000. By 1918, 32,000 pensions had been granted in Great Britain for this type of illness, a figure which had risen to 65,000 by 1921. For the type of neurosis known as effort syndrome, frequently called "soldier's heart," 35,000 men had been given pensions by the British in 1921. On the basis of such figures it was estimated that war neuroses were not less than 10 per 1,000 annually among combatant troops, or 3 per 1,000 among home troops. Recent figures from England indicate that 3.8 per 1,000 of the entire population suffer neuroses causing prolonged disablement. It is difficult to obtain exact figures for this country, since this disease in many cases tends to diminish while people are busy but increases when the excitement is over. Dr. Douglas Thom, an American authority, believes, on the basis of previous experience, that neuroses will tend to increase for as long as twenty-five years after the cessation of hostilities.

What are war neuroses? Another authority says: "They are like Caesar's greatness; some are born with neuroses, some attain neuroses, and some have neuroses thrust upon them." Neuroses are shown in forms of nervous reactions such as fear, anxiety, hysteria, fatigue, confusions and obsessions. We all have these symptoms at times, but in a neurosis they assume more powerful and at times controlling proportions. War neurosis, as the name implies, arises from war situations. On the surface it is seen as a reaction from conflict—deep conflicts between one's sense of duty in protecting this country and one's fierce desire for self preservation; conflicts between the desire for self assertion and individuality on the one hand and the austere demands of war discipline on the other. In times of national

necessity one may be able to submerge his individuality into the great demands of the group, but it is far more difficult to be willing to give up one's life. It is such a great decision which may frequently plant the seeds of neurosis. It should be understood that those who succumb are not necessarily cowards. On the whole, they are probably as brave as the average. They have simply reached the point beyond which lies mental chaos. It is the opinion of psychiatrists that every one has a breaking point from which he will retreat into mental illness. In fact, neuroses may be a blessing in disguise for many individuals who, having run up against a stone wall of intolerable conditions, seek a way out and are able to find an escape into this puzzling type of illness. The mind may become blank, the neurosis simply putting a blanket of forgetfulness about the whole matter. These memories, however, are not entirely lost. They are put in the attic of the subconscious and may come out in unpredictable and different forms to cause the victim the most severe anxiety, depression and other forms of mental illness, such as hysteria.

It is here that some of the newer forms of treatment may be useful. Drug sedation; narcosis (deep sleep), hypnosis, psychoanalysis, psychotherapy--including suggestion, analysis and persuasion, occupational therapy, recreational therapy (or remedial exercises, as the English say) and electric shock therapy are the modern treatments. The fundamental idea is to give the patient insight into the causes of the mental distress and to desensitize him against it. Occupation may help to organize a distractible attention. Play exercise, such as volley ball, golf or baseball, may overcome the feeling of fear of moving one's body. Sleep may assist in overcoming exhaustion and mitigate memories of horrifying experiences. Psychotherapy may give the patient an understanding of his trepidation. In cases of a more serious nature, electric shock therapy may wash the mind of many tormenting memories and ideas.

There are two important aspects of treatment, the work of the psychiatrist and psychologist, and the "home front" treatment by wife, mother, father, brother, neighbors and employers. The home front treatment is simply an understanding attempt to help the returning soldier, harassed by nervousness, to get back to the community on a satisfactory and acceptable basis. The community should endeavor to assist him to feel that he is wanted, is not stigmatized because of his illness, is not the recipient of charity, has ability and will have a chance to work. These environmental adjustments help reassure the individual and often prove more important than the initial treatment. Thus the public at large has an important opportunity and responsibility in the rehabilitation of war neurotics. Many of these men are on the fence and can go one way or another depending on public understanding and positive assistance.

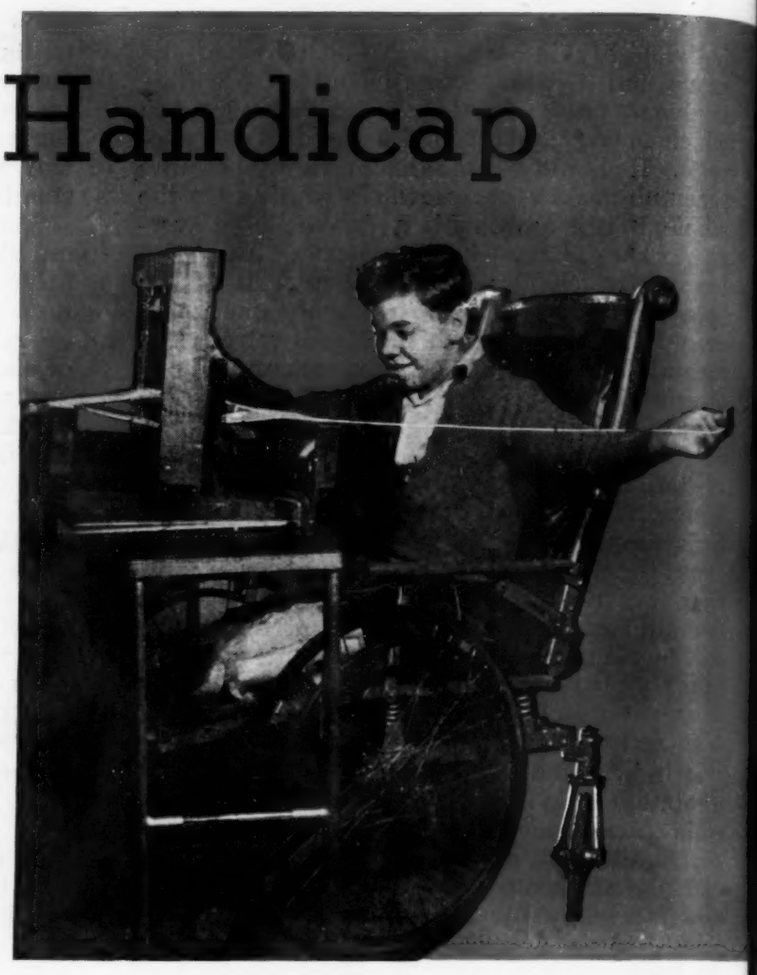
Some of the most common humanitarian qualities, heretofore considered important but more or less outside the horizon of conventional medicine, are gaining scientific status today. Psychiatrists lay stress on the value of simple kindness on the part of government and employer as an aid in preventing neurotic breakdowns during the trying period of demobilization. The depressed, nervous soldier who comes home doesn't want any "sob sister" stuff, but he does need genuine kindness. Recent information from England shows that the government is laying considerable stress on this emotional factor. They know that it is as much how the soldier feels as what he knows that will make or break him as he tries to get back to community life.

What is the effect of war on civilians? Worry about boys in the service, dislocation of home routines due to increasing war demands for work and workers, inadequate sleep and recreation, confusion as to war aims, increasing regimentation on the home front—all contribute to a serious drain on the nervous energy of the civilian. While the experience in England and in this country does not show an alarming increase in this group now, nervous ailments remain a potential threat. They may break out at any time as the present excitement diminishes and the lid comes off. The civilian today in many cases is too busy to afford a nervous breakdown, but one should not forget that this very factor of stepped-up activity may, in the long run, lead to a war weariness which may produce a fatigue type of neurosis. Dr. Gillespie found out in England that those who were able to keep occupied in manual activities were less likely to have neurotic breakdowns.

In treating civilians, the English medical publication *Lancet* suggests that early treatment be obtained near the site of onset and, that patients with mild symptoms, since they are highly suggestible, be treated apart from those with the more severe (psychotic) symptoms. The more severe neurotic patients, too, should receive prolonged treatment, it is held. The general effects of war on the civilian population which in these times may produce nervous breakdowns are breakup of home and separation of family, fear of attack and injury, economic changes, shortage of food and loss of luxuries and pleasures. The story is told of the London family *(Continued on page 554)*

Lifting a Handicap

By NENA W. BADENOCH



With manpower at a premium today, many physically handicapped people have had a chance to maintain useful employment

THE NEIGHBORS told about it with shocked voices: Alex—young, strong and smart, and so eager to learn more about chemistry that he worked after school alone in the laboratory—had been caught in an explosion. The surgeon had to amputate both hands. Eventually he would get artificial hands, but what could he ever do to earn his living?

They smiled at Betty and spoke kindly when they met her on crutches going out to the school bus, but they shook their heads about her and her burdened family, for she was born a cripple.

But fortunately for Alex and Betty, the neighbors in some communities have had enough initiative to start a great, concerted movement, national and international in scope, devoted to the welfare of the crippled. Today it functions in forty states as associations have developed to meet local needs.

In Illinois, the Association for the Crippled is not only a clearing house of information about medical aid, treatment and appliances, but it also maintains two active services for rehabilitation of handicapped persons into usefulness, known as the Homebound Department and the Employment Service Department.

Doctors, parents, friends, or even the patient himself, phone or write to the Homebound Department for help when that inevitable moment of depression comes and life in a handicapped body seems only a burden. Then the occupational therapist, a mature woman who has helped others find their courage, makes her first call to get acquainted and find the spark of interest which will suggest the work most suitable for this person. She wants to build self confidence again through small successes, to instill a new point of view and to train the discouraged person in the habit of daily work over increasing periods of time. She bolsters his morale while he learns his new skill and stimulates the hope of economic return when his work is good enough to market. The proud moment toward which she and her client work is the day when she says: "I'll take this into our craftmart to sell. We are business partners now."

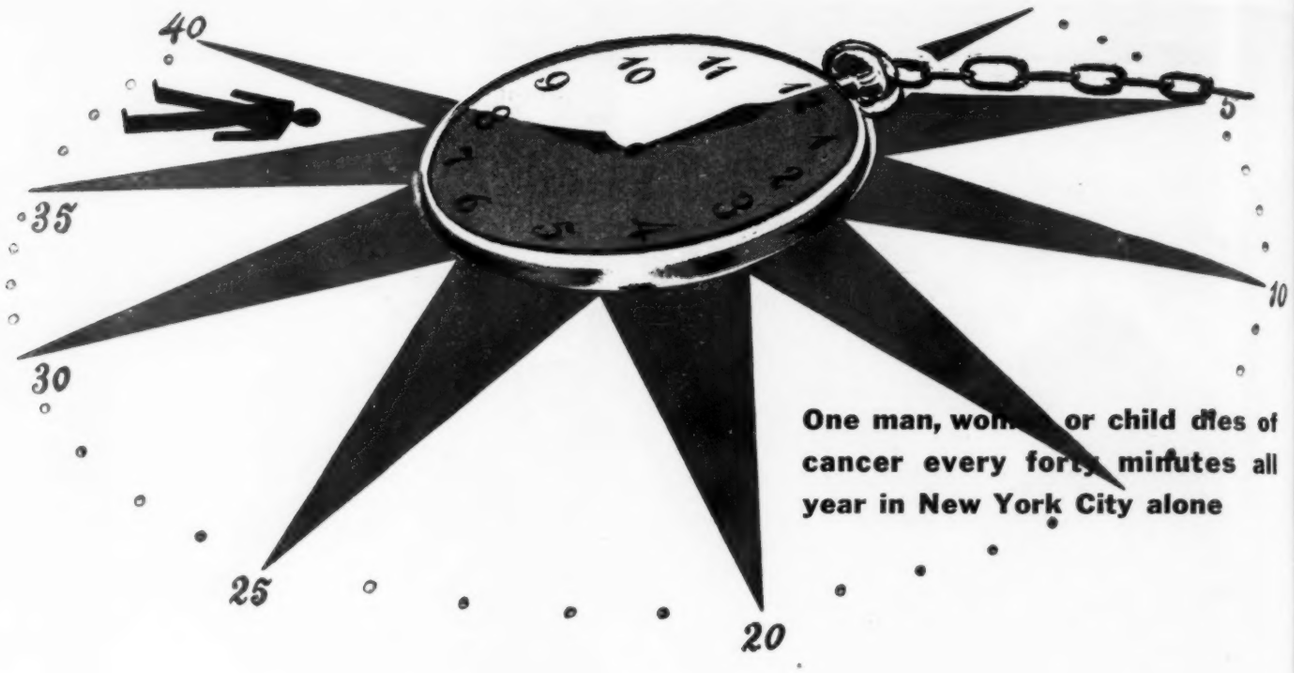
This was the way one patient built a business for himself weaving potholders. He was bedridden when the therapist first called on him. She rigged a "weave-it" frame over his bed and supplied him with materials and designs for potholders. Soon she was selling them for him. The neighbors began to buy directly from him. His mother's church society wanted gay red and white and fresh green and white holders for the annual bazaar. When he had accumulated enough savings, he purchased an adjustable hospital bed so that his mother would not tire so readily in lifting him. Then he continued to save for a wheel chair and special treatments. This year at the annual Christmas Craftmart sponsored by this Association, these potholders were best sellers. Seven hundred were sold.

Associations for the crippled instruct the handicapped in trades. These workers make their living at machine operation

Other forms of craft work—knitting, crocheting, making aprons or doll clothes, leather work, metal craft, weaving or stuffing toy animals and dolls—appeal to various ages and types of persons. But under present war needs, the desire among homebound adults to serve their country has led to industrial piecework contracts under the therapist's direction. The first such venture was making white feathered fish lures for standard equipment in emergency landing kits for fighters who fall in the sea. Through this work, around thirty homebound men and women have earned creditable weekly wages this past year. Approximately fifty workers have been kept busy filling large and small copper gaskets with asbestos rings to be used in army trucks and automobiles. Thirty-five workers swedge points into citation stars for the armed forces.

A despondent war veteran with one leg, at the request of his doctor, was taught by the therapist to make the feather lures. He became one of her best producers and eventually brought about his own rehabilitation through his aroused interest. One day, when no member of his family was available to return his finished lures and bring back new supplies from the factory about six blocks away, he jammed on his hat, tied the box of lures to his crutch handle and "pegged it" down to the factory himself. After that he made his own deliveries and pick-ups, until one day he decided it was far easier to stay at the factory to do his work. Now he punches the clock regularly and has regained for himself a legitimate place in industry.

For handicapped persons who in the first contact with the Illinois Association for the Crippled appear to be employable, a vocational guidance and employment service is maintained. Here the counselors explore the physical abilities of the handicapped applicant, his former work background, his dominant interests and what he has to offer industry. For a man or woman on crutches the counselors try to *(Continued on page 559)*



CANCER

By
RICHARD CHARLTON

NO REASONABLE organization would suggest an addition to the crowded hours of teachers of biology and general science were it uncertain of the significance of its advice. No department in the public service could be expected to grant space and time for a project less important than that now presented by the increasing effort toward cancer control of the American Society for the Control of Cancer.

The American Society hopes to convince teachers that few other avenues of approach to the cancer problem offer more than an insignificant value compared to its present attempt to reach American students. Only the student may view cancer in clear biologic outline unshaded by the gray of bitter experience or the black of personal loss.

It has been the habit of writers to reiterate the fact that about 160,000 people die each year of cancer in the United States. There is a more dramatic presentation. The total number of killed, wounded and missing among the armed forces of the United States reported on the second anniversary of Pearl Harbor was less than the actual cancer mortality in our country for one year. To bring the picture into tragic focus, think of this: In New York City alone one man, one woman or one child dies of cancer every forty minutes, day and night, all through the year. Because approximately one fourth of this death rate is unnecessary, because the human suffering it entails can be cut down by 25 per cent, even in the present imperfect state of our knowledge, but is not, these facts are a scandal.

Charles Frohman was not the only man to look on death as life's greatest adventure, but all of us rebel when such a way out is forced on us in the happy, productive middle years. We have a right to live, as long as life is good. We develop a reaction of dismay at the vast sacrifice now imposed by malignancy.

Over the years my generation has watched with diminishing wonder a rapid elimination of one disease after another: smallpox, typhus, diphtheria, scarlet fever, tuberculosis and others. Some are scarcely more than names—vague names from the time when through the streets of Eastern seaboard cities men walked with clanging bells, and cried, "Bring out your dead!" Cholera days in New York. Typhoid concentrations in our Spanish War. In the recent past even pneumonia, the disease which Osler called "Captain of the Men of Death," has lost its rank. Meningitis, a camp follower, succumbs. Extensive abdominal operations, once hazardous, are simpler—because Domag discovered the possibilities of the sulfa group. Diabetes no longer kills the child, because of Banting. The debut of penicillin is accepted, but no man knows its power. These are steps

on the stairs, and as they rise the threats to man diminish.

But cancer still commands the heights, and for its control until the advent of the day and the final weapon, we must depend on other technics than those which have neutralized the effects of bacteria, of toxins and of virus. In this advance, teachers of general science and biology appear on the stage to play a major part, not in an exciting drama, but as rescue units in one of life's deep tragedies.

The solution of the cancer problem travels along two lines—one educational, for recognition and salvage of curable cancer; the other research, looking toward elimination of the disease. Teachers can make it possible to carry out one half of this design. In a virgin field, by devoting some of their already crowded time to acquiring knowledge concerning cancer, they can give necessary instruction, after their county medical societies or cancer control organizations have been persuaded to

Teaching in Schools

make materials and methods available. A day will come when the departments of education will learn that cancer teaching must be added to the school curriculum for the preservation of the average man and the rescue of an occasional brilliant mind. Consider a single example of great possibilities inherent in the acceptance of a cancer teaching task: Cancer of the uterus is often a curable disease if discovered sufficiently early and adequately treated at once. In the state of Pennsylvania in the year 1942, 1,300 women died of cancer originating in that organ and perhaps 2,000 more were going through its miseries, while no one knows how many men and other women were suffering mental anguish from knowledge of the affliction. No one can guess the ramifications of the wretchedness involved. A citizenry informed through knowledge imparted to its children and an alert profession might end the dreary tale. Teachers may lead the movement.

By using figures recently gathered in the state of Massachusetts, it is conservative to declare that because of lack of knowledge such as could immediately be made available for transmission to students, 60 per cent of uterine cancers were actually inoperable when treatment was started. Due also to lack of knowing, only 11 per cent reached the surgeon in the early operative stage, while 29 per cent appeared in that course of the disease known technically as "borderline operability."

Delay in seeking adequate help is the second responsible cause of cancer deaths. Among uterine cancers the chance of cure may diminish in certain cases at the rate of nearly 4 per cent each week. Critical days are lost to the patient for lack of knowing a few simple facts which can be among a teacher's assets. Delay can be shortened by swift education of the public.

How can this be managed?

In the states of California, Illinois, Ohio and Pennsylvania, there are approximately 100,000 boys and girls in high schools. Allowing four persons to a family, plus their collateral relatives, these boys and girls could project an appreciation of cancer, with data covering its early recognition and notes on proper care, into the minds of nearly a million people in a single term of the first year's teaching. With a crusading spirit and the help of medical societies and social organizations, a wave of light could be flashed to millions of people in these states alone.

A great philosopher chained the lightnings. It remains for teachers of general science and biology to mitigate the unhappy lot of large numbers of our fellows who, but for the information educators may impart, will at some time in their careers, bereft of comfort and of hope, travel the deep valleys alone.

Perhaps teachers may wonder how to begin; they may think the assignment is too large. Actually, it is simple. Their doubts may be resolved in an ancient Platonic wisdom expressed in the teaching of that master who knew education to be a lifelong process. Let teachers learn a few facts about cancer and teach a few. Out of such trials there will evolve a clearer approach to this subject which holds a peculiar fascination for the adolescent.

Before the project of a cancer textbook for use in high schools was initiated four years ago, I talked to a class of students in Yonkers, N. Y. I suppose that never before in the history of pedagogy had 15 year olds been subjected to such an experiment. This is what I said:

"Consider the drama of a cell. Not a convict's cell, aggregations of which make a Sing Sing or an Alcatraz, *(Continued on page 558)*

By
LOIS MATTOX MILLER
With the research assistance of THEODORE IRWIN

The Unfolding

IN A DETROIT hospital last year a 60 year old woman lay dying of pneumonia complicated by pernicious anemia. Formerly, either disease, by itself, might have meant the end. But the deadly combination, even in an elderly woman, failed to ruffle Dr. Warren Cooksey. He checked the pneumonia with sulfa drugs. Then medical science performed the second half of a dual miracle: The anemia was treated with transfusions of red corpuscles —one of the many new life-saving by-products of donated blood. Dr. Cooksey's report of the case reads laconically: "Uneventful recovery."

Today, donated blood is cutting the death toll among men on our fighting fronts to a fraction of the grim possibilities. On the home front, ingenious scientists, unwilling to waste even a small part of the people's life-giving generosity, are working miracles with human blood's by-products which will lower the death rate from disease in the postwar world.

In New England some twenty-five people are walking around with a substitute brain covering inside their heads. Acquired during a brain operation, this man-made membrane is a nylon-like film devised from fibrinogen, a component of blood.

In Philadelphia, Baltimore and Boston last year, over a thousand children and adults who either had contracted measles or been exposed to it were inoculated with another new preparation—concentrated immune globulin, also a component of blood. Their illness was either cut short or prevented entirely.

At Walter Reed Hospital recently an Army officer was rushed in with a severe case of peptic ulcers. He was bleeding profusely, and his blood count was dangerously low. Transfusion of whole blood might have intensified the hemorrhage; even if the treatment were successful, it would take weeks for the lesions to heal. Instead, the Army doctors administered pints of red blood cells—heretofore a worthless by-product of plasma production. Within a week, the ulcers had ceased bleeding.

Blood carries many substances essential to life. Break down your pint contribution and see what is in it. At the processing laboratories, flagons of blood are placed in a centrifugal machine that whirls them until the thick mass of red and white cells settles; then the straw-colored plasma is drawn off from the top. Until 1943, the red cells, which made up about 50 per cent of your blood contribution, were thrown away. Their clinical value was unheard of before 1939.

Plasma itself can be broken down into many useful parts: albumin, fibrinogen, globulins and various minerals and hormones. Albumin is just as effective as plasma itself in the treatment of shock; because of its concentrated form it can be shipped to casualty stations abroad in much less space. Fibrinogen forms the clot which protects the body against loss of blood. Globulins include prothrombin, part of the clotting mechanism; and the gamma globulin holds the antibodies—the protective agents created by the body to fight a specific disease.

Medical journals today abound with clinical reports on the heretofore unsuspected roles which these factors may play in wound healing and the conquest of disease. Scientists, with more contributed blood available than ever before, are continually subdividing it until each component part seems to offer a new cure for some previously incurable ailment. Each new achievement is part of the still unfolding miracle of blood.

From the time in 1616 when William Harvey, an English scientist, discovered that blood is a life force circulating through the human body, doctors dreamed of the possibilities of transfusing it from strong, healthy bodies into the veins of the sick and dying. But their attempts were tragic failures. Not until 1901 did a German scientist, Landsteiner, supply one of the chief reasons why: Human blood falls into four distinct types. Blood of one type, transfused into the veins of a person whose blood belongs to another group, can be fatal.

But Landsteiner's great discovery solved the problem only partly. Even though they knew how to recognize blood of the desired type, doctors were faced with the problem of transferring it from the veins of the donor to the patient. Direct transfusions were tedious,

Miracle of Blood

painful and dangerous ordeals. And, once it is removed from the body, blood coagulates in two to ten minutes. Doctors agreed that until an anticoagulant could be found, the miracle of blood transfusion would remain unrealized.

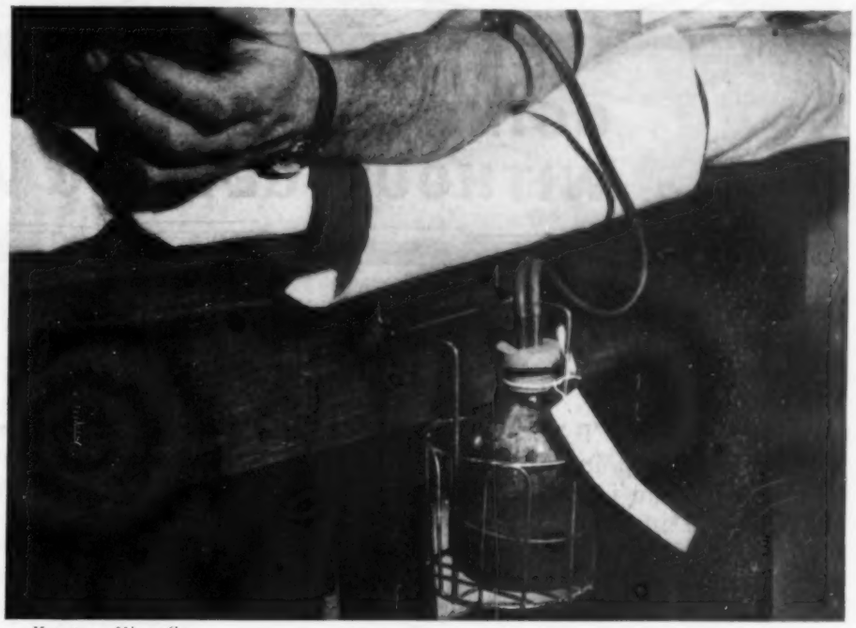
In 1914, Dr. Luis Agote of Argentina, already a distinguished physician and statesman, began the quest for such a substance. At the end of six months, working on rabbits and dogs, he had investigated every anticoagulant known. They were all failures.

Then one day, still mulling over his problem, he passed one of Buenos Aires' most fashionable restaurants. The window was full of eggs. Something clicked in his mind. "Coagulation of albumin!" he cried. "Sodium citrate prevents it. Albumin is part of the blood's liquid. . . . Sodium citrate!"

Dr. Agote rushed back to the hospital. An orderly stopped him at the door and reported that one of the patients awaited a much needed blood letting.

"Magnificent," said Agote. "I will do it myself."

While the orderly hurried off to tell the news that the distinguished director of the hospital had descended to blood letting, Agote poured a small amount of sodium citrate into a flask, then drew the patient's blood into it. He put the flask in a safe. Ten days later the blood was still liquid, without a trace of clotting. For the next six weeks he experimented, carefully *(Continued on page 535)*

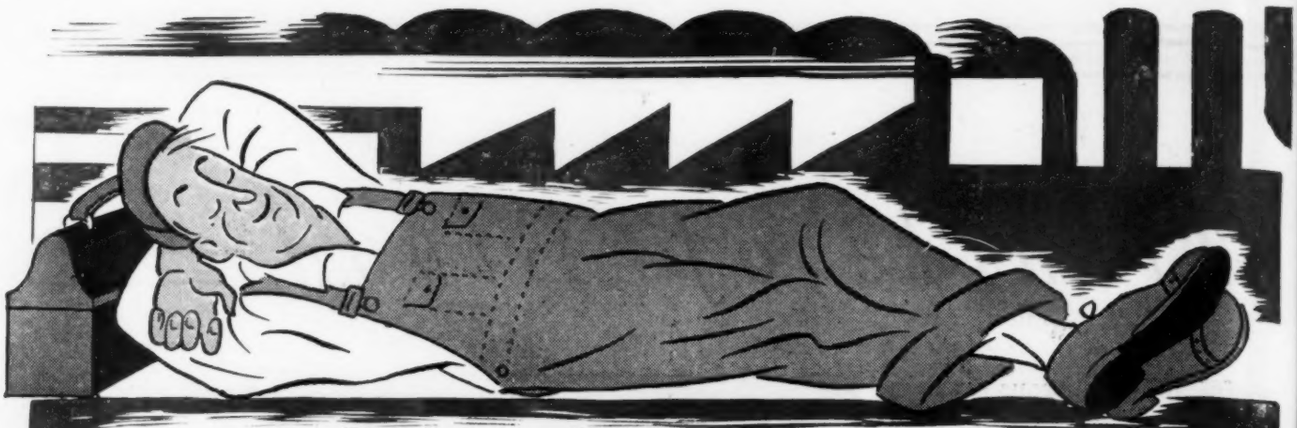


Keystone View Co.

Since the Red Cross drive was organized in 1941, over 5,000,000 pints of blood have been donated

Keystone View Co.

Blood is sent from donor stations to laboratories for processing. Now red cells and other substances in the blood besides plasma are used in treatments



GOING ALL-OUT WITHOUT GETTING ALL-IN

By CHARLES M. de FOREST

WHEN GENERAL EISENHOWER, as newly appointed chief for the British-American invasion of Nazidom, electrified us with his promise of victory in 1944, he hedged with the proviso that all men from the front line to the remotest hamlet of our two nations do their "full duty." President Roosevelt broadcast to us last Christmas Eve that the massive offensives in the making would require every ounce of energy and fortitude that can be summoned "in all the workshops at home." Prime Minister Churchill had previously admonished: "We must all drive ourselves to the utmost limits of our strength."

Victory, freedom and sheer self interest bid each American past childhood to go "all-out." Does this mean that when you are *tired* you should keep right on working? It may mean so when an emergency arises for a day but not throughout the continuous emergency of total war or national depression. Work without respite is not the way to produce most over a month or even a week. When you labor six hours and then take on another six at once, except for a meal, at the end of the second stretch you are much more than twice as worn as after the first. Fatigue accumulates not in arithmetic but geometric progression.

To shorten our war casualty lists we need to lengthen the time used for producing munitions and bracing the economic home front. Daniel Poling, who serves as chaplain-at-large for our fighters on four fronts, sounds the slogan "Minutes are men!" Every alert, patriotic man and woman wishes to work the maximum time efficiently possible. Here is a principle to apply: When you are weary, the sooner you rest the less time you need to divert from work. If you are one of the sixteen-hours-a-day toilers, make your stint three or more shifts, interspersing three or more periods of complete relaxation, preferably asleep.

This is no untried doctrine. Napoleon snatched daytime naps, sometimes actually sleeping on his horse in battle. The Associated Press relates that Pvt. Nicholas Timmens, like Napoleon five feet two inches tall, with the Twenty-Seventh Division when it captured Makin Atoll, "killed six of the first Japanese he ever saw, took a nap in the middle of the battle, tossed a grenade back at the man who threw it and entertained his buddies with a Japanese mouth organ." As soon as the fighting was over, Private Timmens was assigned to K. P. duty. Who knows but that the nap made it possible for him to stand that last ordeal?

David Lloyd George, Britain's prime minister during the last two years of World War I and the peace negotiations, wrote me in 1923 that he lay down to rest every afternoon possible. After a quarter or half hour, he awoke refreshed for work. Before the Parliamentary election that year, this youngster of 60 broke all records for the number of speeches given within thirty days. Last year he reached 80 and took to himself a wife!

Is there any one who feels a more constant goading to keep on the job than a farmer's

wife? One of these exemplars of "woman's work is never done," on a New York farm, was asked at 65 how she managed to keep the natural complexion of 35. She replied that she had stuck to the rule of taking a siesta every afternoon and "it makes no difference how high the dishes are piled up after dinner." She lived to a great age.

When a college freshman, I used to plug on studying after lunch in spite of leaden drowsiness. I should have slumbered for fifteen minutes and then learned the lesson in half time. Fatigue spells inefficiency. For high productivity, fatigue must be removed. This requires refreshment. That can be found not only in rest but in food for the hungry, outdoor exercise for the cooped-up and religious quickening for the low in spirit.

Fatigue will have its hearing. If you silence it by taking stimulants, you will find that fatigue, in hiding, has accumulated at grossly usurious compound interest. Coffee, when used to whip our jaded selves into action, is a gyp. This is true also of tea and other drinks employing caffeine, theine or theobromine as pick-up. Methyl-benzedrine can be still more fraudulent. According to Professor Maurice Tainter of Stanford University, one ten thousandth of an ounce of it kills all sleep for at least eighteen hours. It may be the dominant constituent of the "pep pills" administered to Marshall Goering's flyers to spur them to superhuman assignments—and subhuman weakness later. Nowhere is there an ersatz for rest—certainly not in Germany, whose rulers thought they had hit on a substitute even for moral law.

Here is a rule for the ambitious and the prudent to follow in order to go all-out without getting all-in—to produce the most without slow suicide: *Work all the time you are not tired and none of the time you are.* ("Tired" embraces stupor from monotony and other similar enfeeblements.)

"Huh," you may say, "that's a great rule when you are your own boss; but just try taking a nap or slumping in a chair, morning or afternoon, in the shop where I am hired!" Some companies, labor unions and at least one social service organization that I can name do not recognize the hygiene of a lunch *hour.* Lloyd T. Jones, president of a United Automobile Workers local, states that a manufacturer running a nine-hour workday had a fifteen minute paid luncheon period and posted a notice that employees returning one minute late would be docked one half hour's pay. Yet Jack and Heintz, one of the largest per capita producers under war contracts, are reported to allow worn and loyal "associates"—glorified employees—to relax in Turkish baths or under a rubdown on the company's time any day. And many concerns provide rest rooms that are real, not the euphemistic kind.

The number of corporations that grant rest interludes will increase and will do so under the profit motive. When a worker gets rundown through piled-up fatigue he has lowered his guard against the wallops that colds, pneumonia and other diseases expensive to industry stand ready to deliver. The observer of the above italicized rule whom I know best seems to have developed immunity to colds. None that could be called hard hit him oftener than once in five years. None get into the chest or carry fever. He finds that he has added hours to his work day. A multitude of short naps is required to consume as much working time as one case of the flu, to say nothing about the persistent weakness which follows afterward. (It should be added, however, that to keep disease resistance strong this colddodger does all the other proved "health chores" that he knows.)

Even if you can inject no rest recess in a hard, eight hour workday, you can increase your own production by applying the rule. Nap, or at least "horizontalize," as soon as you can after toting your weariness home. Then, refurbished, get in another spell of work today. This may be Red Cross, home repairs, gardening, study for greater earning—activities that make for victory or the economic independence which the citizen owes to self and country.

Too commonly one sticks it out dumbly until the five o'clock whistle and then departs for an evening void of accomplishment. Many are ashamed to nap in the daytime. Then they sit up until 11 p. m.—no matter how they yawn. The shame should be reserved for the overeating, overexercising, and late parties that wear down needlessly. Most of us have conventions that cater to ills. It is wise to stay adaptable. The United States Department of Agriculture has issued a pamphlet urging farmers to milk their cows three times a day for larger yield, scrapping the dawn and dusk convention!

Studies made by Dr. Madge C. McGinnes, director of physical therapy in the Lenox Hill and Misericordia Hospital of New York, indicate that only 52 per cent of us are capable of hard work. That percentage can be raised markedly by making it an American custom to take rest promptly when weariness comes. Pain is recognized as a warning; fatigue must be too. Herbert L. Matthews, intimately observing the fighting on Italy's muddy battlefields, finds that "fatigue is a poison just like a noxious drug."

DANCING—in the Dark

Dancing lessons for young people can aid in the development of good posture, graceful movement and self assurance, but the right kind of school —and the right teacher—must be selected

By LUCILE G. ROSENHEIM

THE six nodding poppies in scarlet caps and green jersey tights cartwheeled off the stage to affectionate applause, and Laura Blair breathed a sigh of relief.

"Thank Heavens that's over!" Her icy fingers relaxed their grip on her husband's arm. "Really, Will, these dance recitals are harder on me than on Betsy!"

Will grinned. "They sure are. It doesn't worry Betsy when she finishes five beats behind the rest of them."

"If only Betsy were as graceful as Gloria—or Shirley!" Laura's voice was wistful as the poppies pranced out for a final bow.

"These kids are good," conceded Will. "But, remember, their folks are priming them for the stage. All we want Gail Bruce to do for Betsy is to straighten her sway back and cure her flat feet."

That's all they want for Betsy. But can Gail Bruce, the best known, most expensive dancing teacher in town, give it to her? Gail's walls are lined with glossy prints of former pupils performing in hotels, night clubs, ballets. Training professional dancers is Gail's business; so naturally her classes are geared to that purpose.

That's why Betsy spends twenty minutes of every lesson doing leg exercises at the bar, with her toes pointed *out*. But toeing *out* is something you should never do with weak arches! That's why, with toes still pointed *out* (correctly— for ballet dancing), Betsy does leaps and jumps and winces with every landing, for this is pure punishment for her feet. When the class does acrobatics, Betsy shines. Her swayback is an asset for back bends and back kicks. But every one of these stunts exaggerates her curve more than ever.

So what happens? At the end of the season Betsy's arches will be weaker, her back more swayed than before. This is a pity, because individually supervised work, with the right teacher, could help her immeasurably.

As a matter of fact, dancing is such strenuous exercise that no child should enroll in a class without a thorough checkup from her physician. Then, if corrective exercise is prescribed, the parents should, through careful investigation, select a teacher equipped to give it. With parent, dancing teacher and physician working together, a constructive program can be worked out that will prove as valuable therapeutically as it is esthetically.

All over the country, every fall, thousands of parents look for dancing schools; but they don't look hard enough. They spend more time finding the right winter hat! They choose a teacher because she's in the neighborhood, or because the little girl next door likes her, or the tuition is cheap. For many youngsters, this hit-or-miss method is harmless, but for the Betseys with physical or social or emotional problems, it can be dangerous.

Take Mary Ann, the bouncing little poppy with the humpty-dumpty hips; or Virginia, so tall and gawky for her age that she's acquired a permanent, apologetic stoop. They go to Gail Bruce to gain grace and self confidence. Will they get it?

Gail's job is developing *dancers*, not children's personalities. Most of her pupils are talented, agile and self-assured. She hasn't the time nor the patience to encourage timid souls quivering in awkward, inflexible bodies. So Mary Ann and Virginia just have to tag along dismally behind the rest of the class, feeling their inferiority here even more than in other situations. Consequently they grow more rigid and reticent with every lesson.

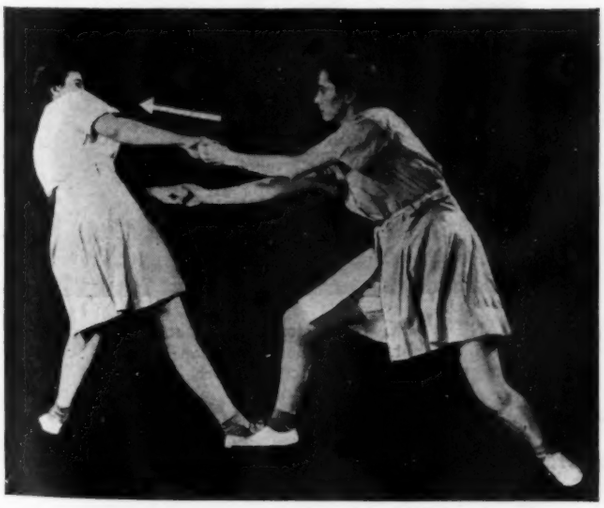
Just what they *don't* need is the best known professional teacher in town! They need a teacher who understands and loves children first, dancing second. A teacher who sees dancing as a richly satisfying form of self expression and not necessarily as a professional career. Such a teacher will inspire Mary Ann and Virginia with an absorption in creative beauty that can rid them of some of the tensions that manacle their bodies and spirits.

(Continued on page 547)

ACTIVITIES FOR AGILITY BALANCE AND COORDINATION

THE following stunts and games are in the nature of recreation. However, they should be emphasized as abilities and skills which are necessary aids to body conditioning. Balance cannot be overemphasized. Every opportunity should be taken to improve your control in balance work. Remember that good posture depends on balance. The partner contests give you an opportunity to pit your strength and agility against an opponent.

HAND WRESTLE. Take position shown above. Try to make partner move either foot by pushing or pulling her off balance without body contact. Quick movements are best.



TWO ARM TUG. Take position shown. Attempt to pull partner forward or push her backward. In this the arms should be kept at shoulder height. (See picture at upper right.)

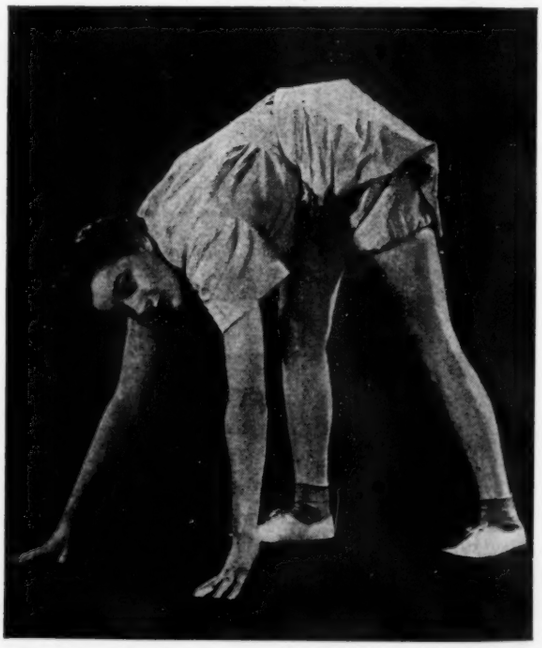
DUCK WADDLE. Walk forward picking up each foot, lifting it with the hand grasping ankle. Do not release ankles.

ROOSTER FIGHT. Take position shown. Attempt to make opponent release toe grip by pushing with right shoulder.

CRAB WALK. Take position shown above. Move body to either side by walking on hands and feet. The body may also be moved frontward or backward. This movement can be used as a relay race if the distance is not too great. Be sure that the hips are kept well off the ground, with arms straight.

GOOD WAYS TO LEARN BALANCE AND AGILITY

DRAKE FIGHT. By pushing, shouldering, and side stepping, attempt to compel opponent to fall over or release her hands from her ankles.



CRANE WALK. Walk forward or backward, keeping knees straight. This movement can be used as a relay race if the distance is short.

This is the ninth in a series of articles from the WAC Field Manual of Physical Training. Designed to condition women drawn from civilian life for the strenuous physical exertions of WAC service, the exercises presented here will help bring physical fitness to men and women in all walks of life.—*The Editor.*

SQUAT THRUST. Stand erect. Bend knees and place hands on floor between knees. Extend legs backward with a jump. Body should be supported on hands and toes so that a straight line could be drawn from head to heels. Return to bent knee position. Return to erect standing. Repeat these four movements rhythmically. This exercise may be used as a test of agility and endurance by counting the number of performances you are able to complete in 30 seconds.

HEEL CLICK. Erect standing. Jump into air and try to click heels twice before landing.

BALANCE STAND. Position as in picture. Close eyes. Balance for ten seconds.

BALANCE WALK. Walk toe to heel in a straight line with eyes closed, arms extended.

. . . Hospital

By RUTH YOUNG WHITE

"HIYA, New Caledonia!" The friendly voice of a sailor greeted us as we walked along "Broadway" to "Forty-Second Street," past the maze of corridors at St. Albans Naval Hospital, St. Albans, N. Y. In a hospital as big as St. Albans, with its 4,000 patients, street names are almost as necessary as in Manhattan.

My companion, Lieut. (j.g.) Catherine Shaw, formerly nurse on the U.S.S. *Solace,* Navy hospital ship plying in Pacific waters, turned to acknowledge the greeting.

"Hiya, sailor," Lieutenant Shaw answered gaily.

"That's the reason I wear my service ribbons on the wards," she told me. "The boys recognize them and then remember that they saw me on the dock in New Caledonia, Samoa or New Zealand. It makes a tie between us and they feel that I understand about the experiences they have undergone. And believe me, I do!"

Her bright ribbons were decorative against her immaculate white uniform—the American theater ribbon with a star for the coastal area, and the South Pacific one. They gave an exotic touch to a garb usually associated with the sequestered sickroom, certainly not with stormy seas, shrapnel wounds and air raid alerts.

Recently I spent several days with Lieutenant Shaw and talked with her about the year she had spent on the *Solace.* She is tall and dark, with long, fringed eyelashes, attractive and good humored, yet quietly competent and knowledgeable. A perfect type to take care of the men who were casualties of desperate fighting in the tropical seas. A perfect sailor, too, in another sense of the word. During her entire year in the Coral and Tasman seas she never was seasick. About half the nurses, she said, were sick during rough weather, but no one let that weakness interfere with her duties. Sometimes they would turn green while they were assisting at operations or supervising treatments for burns; if the nausea swamped them, they would go to the sink nearby, be violently sick, wash their faces and hands and return to duty, calm and collected—if a trifle pale.

Lieutenant Shaw's vivid descriptions of the hospital ship and its place in the huge organization set up by the Navy to care for its sick and wounded men point up what a welcome sight she was, steaming into a harbor, far from home, gleaming white, efficient looking, bearing the red cross of mercy. As she lay waiting off shore in the harbor of a tropical island, she seemed like a messenger from the family in the tree-shaded village back home, where there were beds with clean sheets, attractive nurses in starched uniforms and doctors with every sort of contraption that would help a guy get well.

This was the regular routine in port. As soon as the *Solace* dropped anchor, a boat from shore appeared, bearing the communications officer from on shore. He would report on the number of wounded and seriously ill men who needed to be evacuated and learn how many could be accommodated. Perhaps a patient was from the Navy dispensary, where doctors and hospital corpsmen had performed the emergency operations and put on the first casts; perhaps he was from a group of tents, where Army doctors, nurses and medical technicians had started the treatment for the chills and fever that characterized malaria; perhaps he had been hospitalized in a beautiful, permanent building which now was sending home a legless man to learn how to walk again in an institution near home; perhaps he was coming from a supply ship, tanker or merchantman which had only temporary facilities for isolating infectious diseases or treating deep burns.

Immediately those chosen were lined up, put on board whale boats and motor launches or, if they could walk, led onto flat barges. Trained stretcher men passed the bed patients

Ship +

from boat to ship and up the gangway to the quarter deck. The chiefs of medicine and surgery and the captain of the medical unit and their assistants were on hand to tag the men who needed instantaneous attention and send them to their proper wards: surgical, medical, orthopedic, mental or eye, ear, nose and throat. Generally the seriously ill were put in lower berths and those who needed less attention were assigned to upper berths.

In the wards those angels in white, the Navy nurses, would take charge of bedding the men down, and often they were the first women the men had seen during their tour of duty in the Pacific. Two nurses were assigned to each ward, one to direct the corpsmen in putting the men to bed, the other to handle the charts.

"Whew," the patients would whistle appreciatively as they sank down between clean sheets, "maybe there is something to this business of being wounded." That mood did not last long; their chief topic of conversation after they became used to the comparative luxury of a hospital ship was how soon they could get back to their outfits. But the first day they gratefully gave themselves over to the ministrations of the Navy's famous trio who together fight the battles of injury and disease: the medical officer, the nursing officer and the hospital corpsman.

The first day every one was frantically busy. To be sure, by the time the men had been put to bed, the ship was functioning as a beautifully managed hospital. But there was an air of emergency. Every man had to be examined, some had to be cleaned up for operations, others had to be given prescribed treatments. The hospital corpsmen removed clothes or soiled dressings from the burn patients, washed away the fuel oil or cut away the dead tissue. Baths and clean pajamas were given to those suffering from gunshot wounds and amputations; mental patients were put to bed. All were given a good meal.

Doctors began to operate as quickly as possible in order that every patient should have as long a period of rest and quiet as possible before being moved again. Nurses kept their sleeves rolled up all the time, ready to dig their fingers into sulfathiazole ointment or to change dressings and linen as often as every hour or so.

The eye, ear, nose and throat clinic was a place of miracles on that first busy day. There were such delicate jobs to perform as locating a piece of shrapnel in the eyeball, removing an injured eye in order to save the other, setting sinus tracts, treating an ear that had been affected by an explosion. A punctured ear drum had to be left alone, to heal naturally, if at all. If in their examinations the doctors discovered that either eyes or ears were to be permanently affected, they could recommend hearing aids or glasses. They had the means on board for diagnosis, but they could not furnish the seeing or hearing aids.

The most exciting happening on the first day was emergency drills—drills for bombing, collision and fire. Sirens, klaxons and whistles would sound and the announcement would come through the loud speaker system: "This is a drill!" All those who could walk were sent to their proper stations, and bed patients were assigned to particular hospital corpsmen as their special responsibility. Realizing that patients who were left in their beds at the sound of a siren might worry, nurses and corpsmen took care to assure them this was only a drill for the staff, but that in case of trouble, every precaution would be taken. Every one was informed that if it should be necessary to abandon ship, the horn would blow twenty-three times and the order would ring out: "Provide and equip to abandon ship!" Fortunately, up to the present time it has not been necessary to give such an ominous order from the bridge of an American hospital ship in the Pacific.

After the ship was shaken down into its daily routine, the day *(Continued on page 540)*

Day by day—almost hour by hour—your personal history is written when you are in the hospital. The complete record helps to speed your recovery

By T. E. ALLEN

NOT MANY of us will appear in the general histories which will be written about our time. However, it may surprise you to know that if you have been a hospital patient, a special history has been written about you, and you alone.

General histories are written for the widest possible circulation. Your own history, on the other hand, is a private document—so confidential that even you may not read it without written authorization from your doctor. No one person is the author of this medical and sociologic study about you. It may be that a dozen or more highly skilled specialists have collaborated on this document, the primary purpose of which is to make you well in the shortest possible time. It may also prove helpful in case of future illness, and may provide you invaluable legal assistance in many ways.

The first chapter in your record is written from information which you supply when being admitted to the hospital. As in any proper biography, it is necessary to know your full name, the date and place of your birth, the names of your parents and any other family relationships. Your record is also given a serial number so that it may be properly filed and available for later use. The name of your physician—who will be, so to speak, the editor of your history—is put down in this first chapter, which hospitals call "The Admission Slip." Every piece of information which you are requested to give is vitally important somewhere along the line, both for your protection and for the hospital records. If any question of the admitting officer seems either impertinent or unnecessary, remember first that no one, including members of your family, will see this record without your written authorization and also that of your doctor.

There are many reasons why accurate and fairly complete identification information must

be secured. Here, for example, is an actual situation:

Two patients named Mary Blank, both wives of men named John Henry Blank, were admitted to the obstetrical department of a certain hospital on the same day. Both women gave birth to baby boys on the same day, and both sons were named after their fathers. The complete identification data had not been taken. Correct birth information might easily have been confused.

Nowadays hospital records are often used as proof of age when old age assistance is being sought. Induction centers are now seeking complete records of hospitalization in cases where there is doubt about whether or not the inductee should be accepted for service. Questions often arise regarding health and accident insurance, and when death benefits are sought from insurance companies. In all these important matters complete identification is indispensable. So, to repeat, remember that the questions asked of you by the admitting officer are invaluable for your own protection and welfare. This admission slip completes the first part of your history, before you are taken to your room, where the medical portion will shortly be written.

Once you are in bed, the second collaborator will visit you. He is an intern, and his part of your story is called "The Personal History." This should be more than a stereotyped statement of a few conventional facts. You may wonder, for example, of what value it is to the doctor to know that you had mumps at the age of 10 when you might be in for an appendectomy at the age of 50. There are, however, certain points in your personal history which have a definite influence in later life. If, for example, there has been any decrease or increase of resistance, it should be known. If at any period you were exposed to some unusual infection, this should be noted. Residence is very important in the modern age of frequent travel, inasmuch as certain diseases formerly found only in the tropics have spread to the temperate zone. These are a few reasons why it is essential that you cooperate willingly and intelligently with your intern. Thus your personal history will be a thoughtful study of your physical life, revealing factors which may aid in a more accurate preliminary diagnosis.

Next comes the record of your present illness. This is your part of the record, in which you describe its onset, its course and the symptoms you have. Do not be afraid to go into some detail nor to offer observations in addition to the questions you are asked. This is followed by records of the physical examination made by your physician and supplemented by any necessary laboratory, x-ray and other examinations. Once the preliminary diagnosis has been made and treatment determined, there will be an accurate record of the physician's orders and of the nurse's notes, showing your progress day by day.

If you have an operation, a complete record is made by the surgeon immediately following the operation. Any tissue which was removed goes at once to the laboratory for microscopic examination, and the pathologist's findings are incorporated into your record. The anesthetist also records your pulse rate, the anesthetic used and your general condition during the time you are on the table. If for any reason consultation has been necessary, the opinion of the consultant is included.

Thus, day by day, almost hour by hour, your history is written. It has involved many hours of work. It is the joint product of many skilled specialists, your own doctor, the intern and the nurse, the laboratory technician, the pathologist, the anesthetist and perhaps others such as the dietitian or physical therapist. The record is finished when the physician makes the final diagnosis, notes the end result and signs the dismissal slip indicating your discharge from the hospital.

Your complete record is now the hospital's property and is guarded with extreme care. No unauthorized person can have access to it. In the case of lawsuits, a representative of the hospital, on subpena, takes the record to the court, where it may or may not be presented as evidence, and brings it back to the hospital after its use.

A word might be said regarding the value of your record to the progress of medicine. It is by the study of hundreds of records such as yours that many advances in diagnosis and treatment have been made. Authorized physicians may use your record as an impersonal document, together with hundreds of other records of the same disease, for purposes of study and research. It is not too much to say that your own record plays a definite part in the steady advance of medical knowledge.

All medical records are kept for a period corresponding to the average life span. If you are readmitted to the hospital, your former record will be invaluable to the physician. The recent technic of taking "microfilms" of records enables the hospital to store them in a minimum of space and releases needed rooms formerly filled with stacks of filing cabinets.

It is really true, then, that a history has been written about you and you alone, and it is quite possible that this history, in addition to speeding your own recovery, may prove of real value in the advance of modern, scientific medical care.

A "BREAK" for the War

A PHYSICAL education course offered at Michigan State College may well serve as one of the answers to a perplexing postwar problem—the problem of what to do with the war wounded. Designed to adjust the physically handicapped mentally and physically to their social environment, this course, termed "Adapted Sports," is an important part of the college's physical education program.

It is widely recognized that the physically handicapped often have the problem of developing a healthy mental attitude toward society. This problem is likely to assume major proportions in the case of war-wounded soldiers. Abruptly thrown from the 1-A class of the nation's most physically fit to the ranks of the physically disabled, these men have a big job of adjustment to handle, no matter how they view it.

The psychologic importance of war disability is recognized by Army and Navy doctors. Stories have come from the government hospitals describing the aggressive program by which wounded service men are educated into an optimistic attitude regarding their physical handicaps and their futures. It is an education by action, by creative work and by sports activities.

The hospitals get the boys over the first hump on the road to social and economic independence. But the next hump appears after the men are discharged from the hospitals. Created by well meaning but oversympathetic friends and relatives and by prejudiced employers, this hump can easily undo all the psychologic training of the hospitals. Everybody wants to help the war wounded, but few know how and fewer still care to take any financial risks in order to do so. As a result, the men are coddled for a time, are turned apologetically away from the factories and the shops and, as in the last postwar period, are finally relegated to government homes where they can make brooms and paper poppies for the rest of their lives.

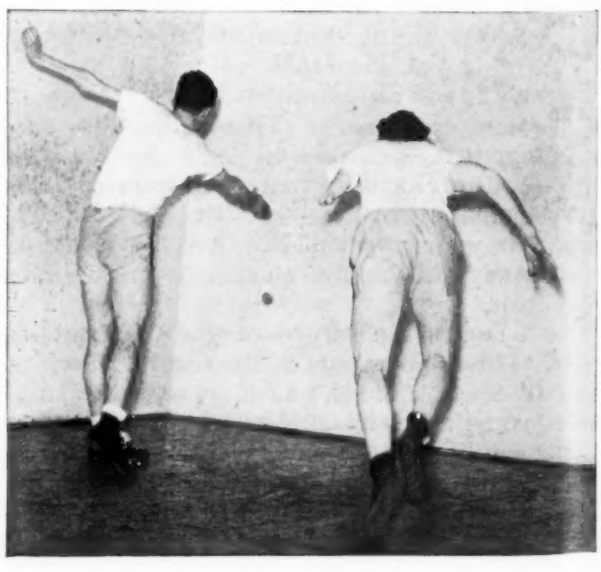
We can help to avoid this waste of good citizens through the adapted sports programs of our colleges. However, too few colleges and universities have this type of physical education at present. The sports program for physically handicapped men at Michigan State College was designed and developed and is administered by King J. McCristal, associate professor of health and physical education.

Mr. McCristal developed this program so that no student on the campus would be denied an opportunity to take physical education because of his handicaps. McCristal says:

"If the student is physically able to walk to class, he has all the qualifications demanded for adapted sports work."

I would like to use my own case as an illustration of the course. My arms and legs were paralyzed in an automobile accident in the fall of 1939. I returned to college fourteen months later, and after I had been there a year, I found that I was losing ground physically. I went to the college health center, and the doctor who examined me recommended that I see Mr. McCristal about his adapted sports course. I went to him, and after he had learned the facts of my case he told me that though he could make no promises, if I would cooperate, he would give me all possible assistance. At that time, less than two years ago, I could not raise my arms above my head, and I could not grip the smallest book in my hand for more than sixty seconds. Today, I am shooting archery, executing pushups and punching the light bag. Just the other day, I picked a volume of the Encyclopedia Britannica off a library

Handball, a great conditioner and all around sport, provides stimulating competition for men with one good arm



shelf and carried it to a study table, in one hand. Periodic tests arranged to measure strength, coordination, balance and general physical ability indicate that I have made slow but steady progress throughout the course. I am certain I would not be in college now were it not for my adapted sports courses.

However, the prime value of this program, as I intimated earlier, is not its corrective nature. For of course little can be done to correct or improve the physical condition of the blind student or the fellow with the missing leg or arm. But much may be done to boost that student's morale, to instil in him a self confidence and a determination that will carry over into his relations with society. That is what Adapted Sports is designed to do.

The objectives of the course then, might be defined as follows: (1) Enjoyable reeducation of muscles by selected sports, to develop initiative and aggressiveness and to provide an emotional outlet. (2) Development of a skill in a particular sport or sports, to give the student a feeling of superiority as well as a recreational hobby for the rest of his life. (3) A lessening of antisocial tendencies and a matter of fact acceptance of his physical limitations. The whole program is a planned attempt to heighten the student's estimation of his personal abilities.

An onlooker might regard a handball game between two handicapped men as a rather pathetic sight. The onlooker, however, would not see the mental reactions of the men playing the game. When a physically handicapped fellow gets going in a stiff game of handball, he has no feeling of being limited. When a fast ball comes his way and when his opponent begins gaining on him, his outer consciousness of his physical condition disappears. He plays the game for all that's in him, and when it is finished he goes out with a strong sense of a job well done and with the feeling of satisfaction that comes when a man has done his best—win, lose or draw. That sort of thing can't be beaten when it comes to building sound minds or sound bodies.

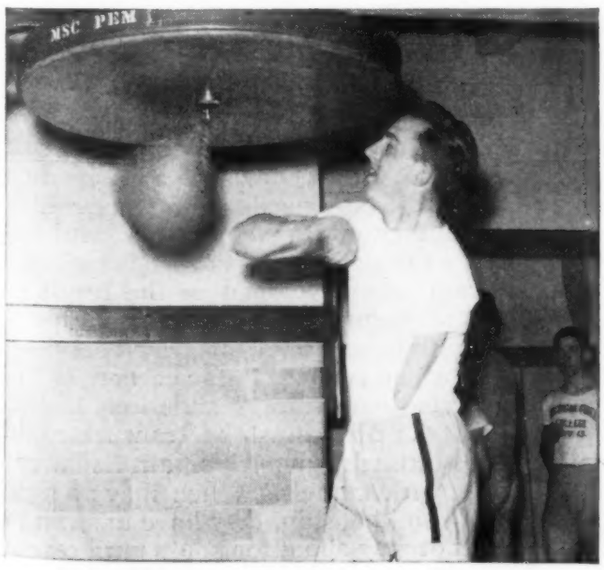
The activities in an adapted sports program are numerous. Among them are included handball, archery, bait and fly casting, darts, badminton, horseshoes and canoeing. Then, in addition, the student may be transferred to a swimming, a tumbling or a wrestling class, as indicated by his particular needs and limitations.

The limitations, by the way, do not count too heavily, as long as they do not constitute a danger—as in the case of a bad heart. For instance, a few years ago, a student came to Mr. McCristal with his *(Continued on page 524)*

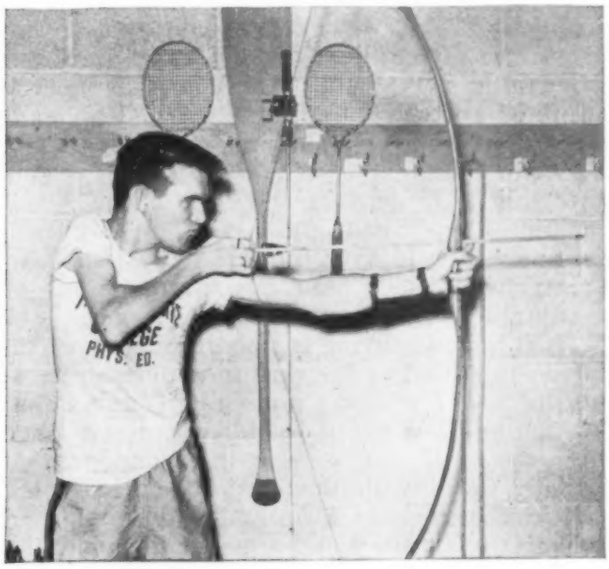
Wounded

By REX M. KING

Handicapped by the loss of an arm, this healthy young man is still a great athlete; he plays football and baseball



For this boy, archery is providing exercise to build and strengthen weak arms—and needed recreation as well

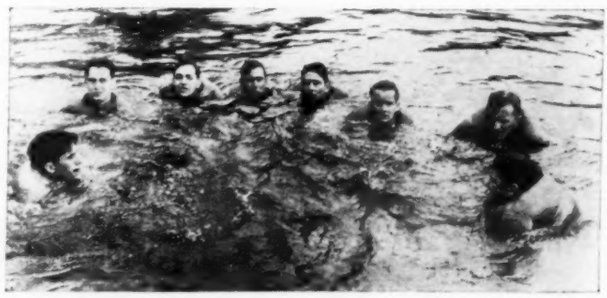


SWIMMING for FIGHTERS

By DOROTHY S. VICKERY

A new kind of swimming lesson is saving lives in the armed forces in this war. "Functional swimming" and "shirt tail" life saving are grim needs in combat

Water safety instructor jumps into a flaming pool at the Victorville Army Flying School, Calif., in a spectacular demonstration staged by the Red Cross



Sailors and marines at Coral Gables, Fla., learn "shirt tail life saving"—air in shirts buttoned at the collar provides vital buoyancy for hours

SOMEWHERE in the region of New Guinea a flying corporal, thrown into the sea when his plane crashed during a storm, managed to keep himself afloat for a hazardous day and night until rescue came. How Corp. Carlton Odell survived the ordeal was told in a story by the Associated Press.

For two hours Odell used a floating barracks bag for support, and when the bag became saturated, he inflated a pair of trousers by tying knots at each end and flapping them in the breeze until they filled with air. He shared this makeshift life preserver with an Aussie who was a victim of the same plane wreck. Both were finally picked up by a native in an outrigger canoe.

Out in the Southwest Pacific, Corporal Odell was putting "shirt tail" life saving to the supreme test. He may have learned about it in a Red Cross functional swimming class back at camp, at a demonstration by water safety experts or at a showing of the Army training film, "Swim and Live." In any case, he knew how to save himself in just such an emergency. Uncle Sam was saved the loss of a valuable member of his armed forces.

Shirt tail life saving is something new which has been added to the skill of American fighting forces. The Red Cross calls it "functional swimming." While it is unlikely that a large percentage of our service men and women will be faced with the corporal's necessities, many of them have been and will be exposed to water hazards. Long a leader in swimming and water safety training for civilians, the American Red Cross devised a swimming course adapted to the needs of warfare, which in many military and naval centers has been adopted as an important part of basic training. The program was developed as the result of two years of inquiry and experiment in cooperation with branches of the armed services.

In a war which reaches to far corners of the water encircled earth, many situations had to be considered. Men must be transported to battle areas through submarine patrolled areas and mine sown channels. When they go over the side of a sinking ship, they have to swim to rescue craft or stay afloat for hours until rescue

Sailor practices the underwater approach in rescue of a struggling victim. This is part of the Red Cross functional swimming course for coast guard

The "tired swimmer carry" is demonstrated here by coast guardsmen of the Seventh Naval District, Fla., members of an instructors' course in swimming

Army nurses from Bowman Field, Ky., learn wartime water safety methods from the Red Cross. Problem is to carry wounded man across a shallow "stream"

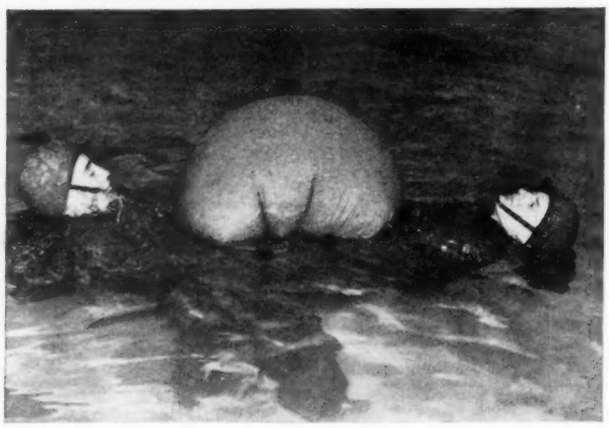
Supporting themselves by inflated duffle bags, men at the U. S. Naval Air Station, Key West, Fla., are learning how to remain comfortably afloat for hours

comes. Airmen, forced down on the water, are strictly on their own when their planes sink swiftly from under them. Ever present is the menace of oil covered waters and burning gasoline. Sometimes men enter the water with injuries, or must aid a wounded comrade.

For tactical as well as for life-saving purposes, military authorities have favored a system of swimming instruction comparable to realistic training in other combat operations. Fording a stream to assault enemy batteries, landing through heavy surf in invasion barges, crossing bridges in an advance through watery terrain and swimming silently in the dark to avoid enemy fire are maneuvers under conditions which were never encountered on a vacation beach or in a swimming pool at home.

To save lives and make men seaworthy, hundreds of natural swimming areas have been created in or adjacent to camps, posts and training stations, while large numbers of training pools have been constructed. Hundreds of professional swimming instructors have been commissioned to organize and give leadership in aquatic training programs. Thousands of men in the ranks have been trained as instructors by Red Cross water safety experts and have been assigned to teach other men in their units. It has been discovered that swimming can be taught satisfactorily en masse, follow-

This coast guardsman in a pool at Miami Beach is resting easily in the water on "water wings" improvised by tying up and inflating a pair of pants



Another device which saves lives by keeping men afloat when they're thrown into the water in full military uniform—the inflated blanket

ing the same system in general by which citizen armies and navies are trained and perfected in many of the elements of warfare.

It takes about ten aquatic lessons to equip most of our men in the armed forces to handle themselves competently in deep water. The United States has been called a swimming nation, but actually this is not so. We are a bathing nation, yes, but we are not universally skilled in the art of swimming. This was proved beyond doubt by the discovery that 10 per cent of the men entering service are skilled swimmers, and the remaining 90 per cent are either novices or cannot swim at all.

Even a skilled swimmer, trained according to prewar standards, must learn to adjust himself to the demands on his strength which may be made in the course of his war experience. Speed, daring and form were the requisites of an expert swimmer in peacetime. In wartime, he needs endurance rather than speed, and no one will criticize the beauty of his form if he has to swim for survival. Because of his ease in the water and his mastery of fundamental movements, however, an advanced swimmer can pick up functional swimming methods in a few easy lessons.

The unskilled 90 per cent, including novices who cannot pass a specified swimming test, must learn first the rudiments on which functional swimming is based. The elements of the beginners' course are simple and only eight in number. They include floating, the breast stroke, the side stroke, the elementary back stroke, submersion and underwater swimming, treading water, jumping and diving. These are the safety skills basically most useful to a fighting swimmer. If instruction must cease at this level—as it does in some instances when troops are transferred—it has at least given the men trained a better chance of survival than they had before.

So important is floating in military use that it is the first skill taught, and it is constantly practiced. Out in the ocean a thousand miles from land a shipwrecked soldier or sailor is not going anywhere. He must stay where he is until picked up, which may mean a long period of waiting. Floating is effortless and conserves energy for such an ordeal. It may make survival possible, too, when a man is helpless because of wounds or injuries.

For the same purpose treading water is practiced regularly, too. Floating about in a life belt or life jacket tends to throw one off balance. A swimmer can bring himself upright with the leg movements of treading. Since this is a deep water skill and an adaptation of freer movements, it is learned after other leg strokes have been mastered.

Swimming strokes which meet military requirements must be strokes which can be used for hours without exhaustion and which can be employed both for swimming in a small area or for a distance of a mile or more to shore. Swimming in still water, choppy water, currents or surf, and swimming fully clothed and with equipment or weapons are other conditions which must be met with the most effective strokes.

It has been found that the breast stroke style of swimming is of the greatest value, with the side stroke and the elementary back stroke useful for change-over positions. Because the effort of lifting a water soaked sleeve saps the strength of the swimmer, strokes which bring arms out of the water are taboo for the duration, as are strokes which call for rapid and continuous action. *(Continued on page 548)*

FOOD AND DRUG *Detective*

By WALLACE WERBLE

IN JUNE 1907, the late Dr. Harvey W. Wiley, father of the original Pure Food and Drugs law of 1906, lined up the first group of federal food and drug inspectors in Washington to indoctrinate them with his zeal for protecting the consumer and reforming these two industries.

During this session, his attention was fixed on a tall, lean, spare, serious looking Scotsman, Walter G. Campbell, who had given up a young law practice at Louisville, Ky., to take a temporary job as a federal food and drug inspector. Campbell had come to Washington with the intention of spending a few years in government service and then returning to his law books.

As he left the room, Dr. Wiley made a decision that changed the whole course of Campbell's life and insured a permanent future for federal food and drug control. The famous crusader turned to an aide and remarked that Campbell would be the first chief inspector for the food and drugs unit of the Department of Agriculture's Bureau of Chemistry.

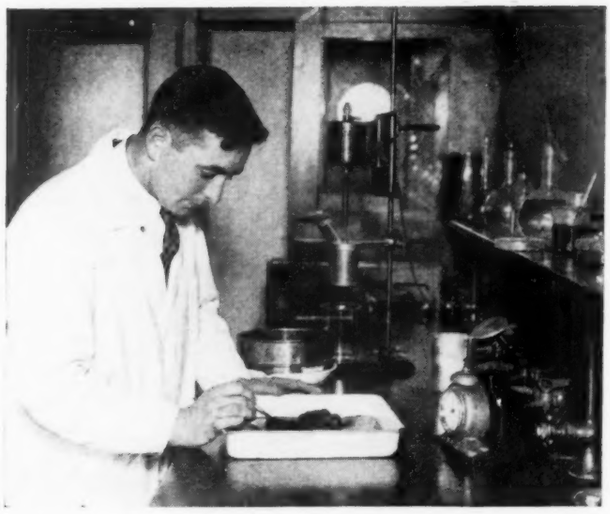
From that day until April 30, 1944, when he retired from public life, Campbell's personality and policies dominated federal food and drug regulatory work. During the intervening thirty-seven years, Campbell gave his life to transforming Dr. Wiley's dramatic crusade into a permanent, smooth running government operation.

Walter G. Campbell, who retired April 30 as Food and Drugs Commissioner after nearly forty years of giving the U. S. a "bargain in government"

When the 1906 law was passed, the food and drug industries regarded the event as a radical revolution. By the time Campbell retired not only the food and drug industries, but the cosmetic industry as well, viewed federal control as part of their way of life. In fighting for enactment of the 1906 law, Dr. Wiley, who had a flair for publicity, made the nation food and drug control conscious. By the time Campbell retired, the consuming public had long since forgotten about the subject and was taking the benefits of federal control for granted.

Like so many fighting reformers, Dr. Wiley left much to be desired as a practical administrator. One of Campbell's first jobs was to talk his boss out of a plan to force all food and drug inspectors to carry shopping bags or market baskets when making their inspection rounds. Dr. Wiley thought they could use the bags and baskets to carry the samples of food and drugs collected on their inspection trips.

When the government decided to make its first important seizure (a shipment of adulterated whiskey), Campbell went to Baltimore to superintend the operation. The district attorney admitted he didn't know how to draw up the papers, so Campbell did it for him without consulting a law book. Borrowing heavily from admiralty law and procedure, Campbell's



FDA chemist tests the amount of puree in canned tomatoes. Public protection is FDA's watchword

first seizure established the form still being used by the government.

When Dr. Wiley retired, Campbell took over in fact if not in name. In 1916 he was made nominal head of federal food and drug control work. In 1923, Secretary of Agriculture Wallace promoted Campbell from the Bureau of Chemistry to a post where he had supervision over all the Agriculture Department's regulatory work. Campbell could have used this job as a stepping stone to a government career that would have gained him fame and publicity. However, after securing the separation of food and drug regulation from the Bureau of Chemistry, where control work conflicted with a primary interest in agricultural research, Campbell in 1927 returned to his first love—the new Food and Drug Administration.

Campbell's retirement from public service has robbed the government of its number one "model bureaucrat." Heading the Food and Drug Administration, which serves as a commercial "traffic cop," is not the kind of job to make a man popular among the food, drug and cosmetic industries, but in recent years men in these industries often wished the government had a dozen Campbells.

Even after his retirement, Campbell's methods, attitude and policies will continue to dominate the Food and Drug Administration's work. As his successor, Federal Security Administrator Paul V. McNutt, who is top boss over FDA, promoted Dr. P. B. Dunbar, who had previously been Associate Food and Drug Commissioner.

In fact, Dr. Dunbar entered federal food and drug control work just one month after Campbell. A graduate chemist from Gettysburg College with a Ph.D. from Johns Hopkins University, Dr. Dunbar started in the laboratory by working out some of the first methods of detecting hidden adulterations of foods. However, after displaying a marked ability to write official letters, he was gradually moved into administrative work.

In 1915 Campbell made Dr. Dunbar his first assistant. Ever since, the two men have worked and lived in such close harmony that either one could tell in advance what decision the other would make on any given set of facts dealing with food and drug control work.

One principle dominated Campbell's years of government service—the taxpayer must get full value for every dollar spent. "First things first" was Campbell's favorite way of telling his subordinates that Food and Drug's money must be spent on enforcement projects which provide the greatest amount of public protection. By weighing every expenditure of time and money against the resulting service to the consumer, Campbell's agency was developed into one of the biggest bargains in government to be found in bureau-packed Washington.

The story of the Food and Drug Administration as it stands today is Campbell's monument. The agency is responsible for the label accuracy and content purity of all foods, drugs and cosmetics that move in interstate commerce. Its activities range from tasting samples of all tea imports to testing the potency of every batch of penicillin used by the military forces.

To detect food, drug and cosmetic adulterations and misbrandings, Campbell developed a small but effective corps of inspectors who are the equal of J. Edgar Hoover's more widely publicized G-men or the Treasury Department's secret service agents. In all, only two hundred inspectors cover the entire country. They neither forget nor abandon a case, particularly when public health is at stake.

Four days before Christmas, several years ago, FDA learned that nine home-made fruit cakes contained flour accidentally contaminated with a deadly arsenic garden spray. It was relatively simple to recover eight of the cakes, which had been distributed by the baker among her Virginia neighbors, but the ninth one had been sold to an itinerant vanilla extract peddler.

Starting the chase without even knowing her name, Food and Drug inspectors traced the house-to-house peddler half way across the country in forty-eight hours. From her they learned that the cake had been shipped to Canada, where at FDA's request it was seized by local authorities on Christmas Eve just as it was being cut.

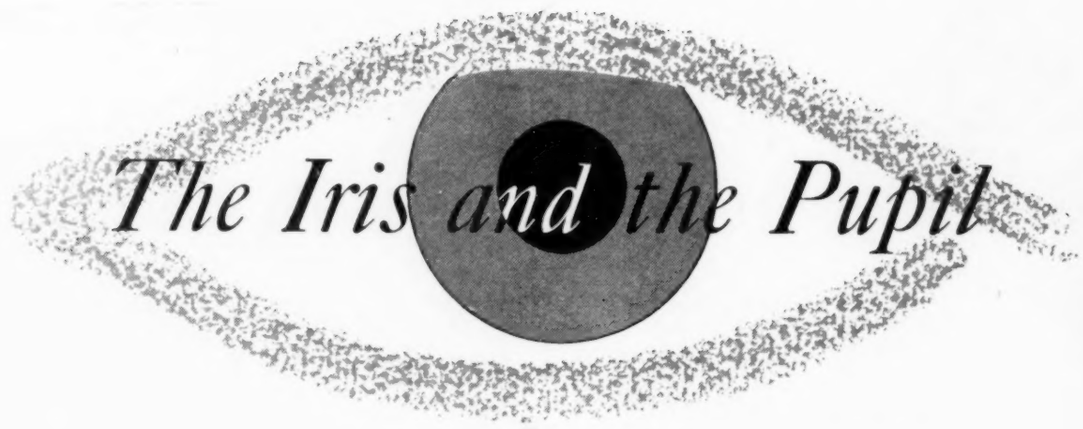
The law gives the Food and Drug Administration the right to secure the physical seizure, by the United States *(Continued on page 556)*

FDA chemist-sleuths traced thousands of bottles of this poisonous "Elixir of Sulfanilamide" all over the country to avoid a nationwide disaster

Seafood inspector for FDA (lower left) observes sorting of raw shrimp just unloaded from boat. Vigilance of FDA men is price of public safety

Bacteriologist in an FDA laboratory examines the contents of cans for possible bacterial contamination. FDA men are mostly scientist-detectives

One important branch of FDA service is inspection of the cosmetic industry. Here an FDA inspector is collecting samples of materials used in a cosmetic



The Iris and the Pupil

By JOHN O. McREYNOLDS

INFLUENCING the color and expression of the eyes, the iris and the pupil have always challenged the interest of the general public. This is natural, since these are the most noticeable and attractive features of the eye. Also, there has been attached to them a certain sentimental significance in addition to the important role which they play in normal vision and in many diseases of the eye.

The pupil, or the central opening through the iris, gets its name from the Latin word *pupilla,* meaning a little girl, and it probably was suggested originally by the definite, diminutive image which we see when we look directly into a partially dilated pupil. This image comes back to us from the anterior surface of the cornea very much as a reduced image is reflected from the surface of any convex mirror.

The word *iris,* meaning rainbow, does not relate to the color of the iris but rather to its form, which represents in visible outline the arc of a circle. The mobility of the iris, with the consequent changes in the size of the pupil, is associated with a rapid response to variations in illumination. These physical factors are especially reinforced by psychic influences that manifest themselves through the sympathetic nervous system.

There has always been a mysterious charm connected with the color of the eyes and questions are often asked about the influence of the color on the strength and endurance of the eyes. In answering this question, we must know that the actual coloring matter in every case is the same and consists of brown or black pigment granules distributed in different ways throughout the iris. Blue, gray, brown and black eyes all have in their final analysis exactly the same color. These pigment granules are distributed differently in different eyes. One area of distribution is in the *stroma,* or substance proper of the iris, while another practically constant area of pigment deposits is in the posterior layers of the iris back of the stroma. If the brown pigment granules are abundant in the substance and are superficially situated so that we look directly on them without the intervention of any other tissue, then the iris looks black or dark brown. But if there is a diminution in the stroma pigment, or if it is more deeply placed, then we find ourselves looking this time through the intervening iris tissue. This gives to the iris a bluish tinge, producing blue and gray eyes, just as the red blood in the veins of the forearm appears blue when seen through the thin, non-pigmented skin of a fair Caucasian girl. It is the same effect as that observed through the atmosphere when we look at the bold and blackened cliffs of a neighboring mountain: "'Tis distance lends enchantment to the view, and robes the mountain in its azure hue."

While we are discussing the question of expression in the eyes, we must be reminded that one of the most effective features of the expression does not reside in the eyeball proper but in the lids that cover and conceal the eyes and at the same time reveal the sentiments in the brain. If the eyeball were stripped of its lids, its lashes and its brow, this marvelous organ of vision would be deprived not only of its important shield and armor, but also of its arrows and its lance. These external appendages not only supply and preserve the clear luster and transparency of the cornea but govern and translate expression in the eyes of the passions of terror and anger and the more serene sentiments of tenderness, pathos and joy.

The iris has a complete system of sensory nerves to warn us of *(Continued on page 547)*

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"Why talk to *me* about Old Age? I'm still Young!"

Even if you *are* only 35 or 40—here are some things you should know about growing old . . .

Since 1900, the average life span of Americans has increased about 17 years—a wonderful record.

One result of this trend is that more people now live to a ripe old age than ever before. *About nine million Americans are now 65 or older.*

However, the goal of medical science is not only to add years to your life, but also *life to your years.* Old age without good health can be a heavy burden.

Doctors are doing wonders to help elderly people who suffer from the chronic illnesses of later life—such as diseases of the heart . . . diabetes . . . cancer . . . Bright's disease . . . arthritis.

But doctors know that the best way to be healthy at 50, 60, 70 and beyond is to take care of your health at much younger ages. The reason? . . .

Diseases common to later life seldom appear suddenly. They creep up gradually, quietly gathering force for a number of years before they strike or become disabling.

The moral: Now is the time to start taking care of your health—before you grow old. Visit your doctor regularly for medical checkups. Give him the opportunity to discover—early—conditions or diseases which might lead to later disability. Let him advise you about correcting faulty habits or living conditions.

As years pass, these suggestions will help you keep healthy and happy . . .

Keep your mind open to new ideas. Take up a hobby. Remember that, with age, less food may be required, but it should be carefully chosen. Regular, undisturbed sleep is essential. Drink plenty of water. Get sunshine, fresh air, and moderate exercise the year round.

At any age, good health is a priceless asset. Guard it in every way.

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A "Break" for the War Wounded

(Continued from page 515)

right arm and his right leg missing. It developed that he had been quite a swimmer prior to his accident, which occurred when he tried to hook a ride on a freight train while he was in high school. McCristal enrolled him in a swimming class, and by the end of the term he was swimming four times the length of the pool, he was doing stunts in the water and he was diving from the board. The next term he enrolled in a class in circus stunts, where he became adept at one-handed juggling of three balls and at performing with the spinning rope and the balancing pole. He took a spotlighted part in the interscholastic circus that term.

Mr. McCristal studies each individual carefully before he assigns exercises and sports to him. The only requirement for the course is a diagnosis slip from a doctor at the college health center. The diagnosis is checked and the student is asked to elaborate on the details of his case to determine the exact nature of his disabilities and limitations. He is then assigned functional exercises with goals which he may easily reach by consistent practice and sports which will supplement the exercise program and provide enjoyment while they build.

Mr. McCristal predicts a great future for this type of program. He believes the physically handicapped have been much neglected from the primary grades on up. He has great faith in the ability of the handicapped person to pull himself up by his bootstraps, provided somebody will furnish him the straps.

The physical education department is planning now for an expanded program of adapted sports after the war. The plans call for facilities to handle any reasonable number of men the department may be called on to handle. At present there are about fifty 4-F and medically discharged students enrolled.

Those colleges which do not have this type of program need not wait for the war to end before making a start. 4-F students who need this work may be found on any campus. A good, stiff sports program might, in fact, do much to offset the rather jolting punch some of them may have received at the hands of their local draft boards.

Adapted sports is about 50 per cent psychologic and 50 per cent physical, and—as far as I'm concerned—100 per cent essential.

Make Way for Soy in Your Diet

By
GEORGE K. ANDERSON

The little bean with the big reputation is here to stay—so you should know its many good nutritional qualities

IT IS only recently that the soybean has been introduced in this country as a food of any widespread use; yet already this little fellow has been variously hailed as a "wonder food," a "miracle food" and a "magic plant." It would be difficult for any food to live up to such a description as this, but it can truthfully be said that this bean with which most of us have no more than a hearsay acquaintance has most remarkable nutritional qualities. It behooves us to become better acquainted with this valuable addition to the American dietary. We can all enjoy the advantages which nutritionists attribute to it: the richness of its food value, something new in taste and also its low cost.

In China and the Orient, soybeans have served as a staple part of the diet for countless centuries. There they have been known as the "poor man's meat," since they provided at low cost a large share of the protein which we usually obtain in our diets from meat. Others have called them the "cow of China," because the fluid milk or curd made from these beans has served as the only source of milk ever known to most Chinese babies aside from their mother's milk. Thus the soybean has been a mainstay of the diet in the Orient in the past, just as it still is today.

Our country has had a limited acquaintance with these beans as human food. They were cultivated here as early as 1804, but only on a limited scale and with varieties now considered inferior as human food. It was not until about thirty years ago that their production began to be expanded. This was in response to a greater demand for industrial uses of soy products and an awakening interest in their nutritional qualities. Scientific studies confirmed the knowledge which the Chinese had acquired by practical experience—namely, that the soybean had unique nutritional value. So crop production has been expanded steadily from a yearly total of some four million bushels in 1922 to our fourth largest pay crop, with a total of 290 million bushels, in 1943, and the industrial and nutritional demands call for ever more soybeans.

These beans, which belong to the legume family of vegetables whose seeds grow in a pod and are eaten for food, are similar in appearance to the ordinary type of bean such as the navy and lima beans. There are hundreds of varieties of soybean known today, of all sizes, shapes and shades of color. It is of interest that the types which were first cultivated in this country were more suitable for oil production or animal feed and are now considered as "field types." More recently the cultivation of edible varieties or "vegetable types" is gaining in popularity. It may be estimated that some twenty varieties are grown extensively now, these being selected because of palatability and texture which make them desirable for table use, or for productivity and other special qualities for industrial purposes. They can be eaten either as a fresh vegetable, in the form of dried baked beans, or as any of the prepared products such as soy flour, soy loaf, sauces or spreads. In any form they still have their high food value.

Perhaps the easiest way to become acquainted with the soybean is to raise it right in your own garden. It lends itself readily to cultivation on a large or small scale and has been found to be one of the hardiest of crops. In the face of droughts which dwarf most other types of vegetables, the soybean continues to grow as usual. Those who have grown soybeans in home gardens are enthusiastic about this crop. It produces a yield two or three times greater than other types of beans and may be made to provide a continuing supply of the green vegetable throughout the growing season. This is readily accomplished by planting varieties which mature at different periods. When the beans are picked, with the pods fully developed but still green, the shelled beans serve as a fresh green vegetable for table use and taste much like fresh lima beans.

Using soybeans as a fresh green vegetable just gathered from the garden is only one of several ways in which this remarkable food can be served in the family menu. Perhaps their greatest utility as a food in the home is in the form of the dried beans, which are available the year round. These are prepared in essentially the same manner as the well known Saturday night dinner of baked beans, and can be made just as tasty. Otherwise the dried beans can be used as stock for numerous kinds of soups, adding much to the nutritional value. As a filler for meat dishes the soybean has been found to meet a particularly pressing need in the current shortage of meat and similar protein foods. In many instances its use need not be limited to a supporting role, but it can be featured as the main dish in a variety of forms which take the place of the meat course. The market availability of commercially prepared soybean cutlets and loaf will encourage the housewife to make increasing use of these nutritious dishes.

Soybean sprouts may be made by any of several methods, utilizing the general principle of holding previously soaked beans in a moist container in the dark for three to five days. This is one of the favorite Chinese methods of preparation, and it is now known that these sprouts contain a considerable amount of vitamin C. The dried

The man who forgot what sheep look like

Meet a happy, happy man!

A while back, he knew sheep by heart. (He *should*—he counted flocks of 'em every night.)

But now, though he racks his brains, he can't even remember what sheep look like!

Thing is, he got bright and laid his case of sleeplessness before his doctor, who said: "While many people can drink coffee without ill effects, you're not one of them. Why not switch to Postum instead?"

In cases like this, many doctors find it helpful to suggest Postum. Postum contains no caffein or other stimulants . . . yet satisfies, with its rich, robust flavor, the craving for a hot mealtime drink. Postum is a product of General Foods.

Postum—one of America's great mealtime drinks

beans can also be crushed and soaked in water to make a liquid which when strained and heated is the well known "soy milk." This has nearly the same composition as cow's milk. It has been used extensively in this country as a substitute for cow's milk in instances of milk sensitivity in children and may take the place of milk in cooking. From the soy milk a curd can be prepared for those who prefer this type of food. This can be eaten as a soft, cottage cheese-like food, or allowed to harden and ripen like many of our American cheeses.

Some of the most widely used soy products cannot be readily prepared in the home. This need be no obstacle to their utilization, however, because in ever increasing abundance our food industries are preparing soy products for our use. For example, a large share of the palatable margarine available today is made from soybean oil. At present some twenty million pounds of this oil are used monthly in the manufacture of this nutritious butter substitute. In smaller quantities the oil is finding its way into our homes as salad oil and vegetable shortening. Then, last but not least, must be mentioned the rapidly increasing production of soy flour, flakes and grits. These extremely valuable and useful foods are being prepared in different ways, so that we can buy a product containing all the fat of the soybean or a flour with most of the fat removed. Each has its particular merits for use in breads, pastry, cakes and other foods. Prepared mixes containing suitable proportions of soy and wheat flour along with the necessary baking ingredients are now appearing on the market. These products are all well chosen combinations of foodstuffs and have much to offer from the nutritional standpoint as well as taste appeal.

It is difficult to estimate whether food requirements or industrial needs have first call on this valuable plant product. Our nutritional needs are unquestionably pressing at the present time, but so are the industrial requirements for soybean oil and residues. From these such indispensables as soaps, explosives, rubber substitutes, paints and rayon are now prepared. There is no waste; the residual meal is used in the manufacture of glue and plastics or for fertilizer and animal feed.

But with all the talk of the nutritional uses of this "wonder plant," just what is its value to us as a food? From the scientific studies that have been made we can now say that its food value is remarkably great no matter how you look at it. The soybean might well be

For Speedier Ultimate Recovery

from acute febrile illness or after injury, wastage of body protein must be prevented. Meat is important for this purpose, and should be included in the patient's diet as early as possible.* For the proteins of meat are of highest quality —containing all the indispensable amino acids in proper proportions—the RIGHT KIND of proteins for every need, in illness or health.

*The Committee on Convalescence and Rehabilitation of the National Research Council recently adopted recommendations for the nutritional care of the sick and injured, in which it declared: Wastage of body protein in acute febrile diseases and after severe injuries is a matter of grave importance, since it may injure the liver and other vital organs. Every effort should be made to prevent such body protein wastage by giving "diets containing adequate amounts of protein of high biologic value containing all the essential amino acids in proper proportion. . . . ground meats may be given earlier and more freely than is generally believed." (Journal of the American Medical Association, page 1207, April 22, 1944).

ACCEPTED AMERICAN MEDICAL ASSN. Council on Foods

The Seal of Acceptance denotes that the nutritional statements made in this advertisement are acceptable to the Council on Foods and Nutrition of the American Medical Association.

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called a "one man gang" among nutritional foods. It carries a big punch in every one of the essential food elements. First let us consider the important element of protein. No other commonly used protein-containing food has as high a content as the soy bean. Approximately 40 per cent of the dried bean is protein. In comparison with other foods soybeans contain twice as much protein as other types of bean and twice the amount of protein as an equivalent weight of meat. The average serving of dried soybeans (¼ cup) has almost as much protein as one quart of milk. The low fat type of soy flour which is now available on the market contains four times as much protein as is found in whole wheat flour. This protein, particularly after it has been subjected to the heat of cooking, is known to be of high quality, or, as it is sometimes called, of high biologic value. It is on a par with meat protein in this respect and definitely superior to that of other beans or wheat. This quality is determined by the essential amino acid content or the "building stones" making up the protein, and by growth response in animal feeding experiments.

Not only in protein but also in vitamin content is the soybean found to be superior to other staple foods. This is particularly true with respect to vitamins of the B complex. Soybeans are a good source of these vitamins. In fact they actually contain, weight for weight, several times as much vitamin B_1 (thiamine) and B_2 (riboflavin) as does beefsteak, and almost as much thiamine as fresh pork, one of the richest food sources of thiamine. Contrasted with vegetable and grain foods, the soybean has half again as much of these vitamins as is found in navy or other types of beans, while soy flour has about this same superiority over whole wheat or enriched flour, and, of course, a great advantage over plain white flour.

One further comparison serves to emphasize again the remarkable value of the soybean as a food. This pertains to the considerable content of such important minerals as calcium, phosphorus and iron which can be credited to the soybean. In these protective elements, these beans again stand up favorably in comparison with our best food sources. Milk is considered an excellent source of dietary calcium and also of phosphorus. One half cup of soybean flour contains as much calcium as one whole cup of milk and as much phosphorus as two cups of milk. As regards iron, milk is deficient in this mineral but navy beans, liver and molasses are probably our ranking food sources. Compared with these, soybeans contain about the same amount of iron as other types of beans, the same amout as an equivalent weight of beef liver, 100 per cent more than the same weight of molasses and 300 per cent more iron than whole wheat flour!

The extravagant statements often made for the soybean can pretty well be justified when one reviews the facts of its nutritional value as we have done here. The large contribution of the so-called protective nutritional elements—the protein, B vitamins and minerals—which this food can make to our diet, can scarcely be equaled by any other food material which has such varied usefulness. Only in vitamins A and C can it be said that the soybean is lacking, but this is to be expected, because most foods of its type, the legumes and the protein foods, do not ordinarily contain appreciable amounts of these vitamins. However, under special conditions the soybean can be made to be a good source of vitamin C by production of the sprouts.

Is it too much to ask that with all these superior qualities the soybean should also have the virtue of being a low cost food? Actually, this is the case. Today these beans sell for approximately 12 cents per pound in most sections of the country, and the flour is priced at 15 cents per pound. Prepared soy-wheat mixes cost little more. By actual calculation, protein food can be obtained from soya products at less than one fifth the cost of securing it from other protein-supplying foods. One could hardly make a better nutritional buy, and as more and more thrifty housewives and meal planners are realizing this the supply in some localities can scarcely keep up with the demand. This problem is now being successfully met by increased production of the beans, to a point where government agencies estimate that all soya product food needs will be met this year.

Nutritionists planning for the feeding of the Army, as well as those concerned with lend-lease requirements, are taking advantage of the unusual food values which are found in the soybean. Attempts have been made to incorporate various soya preparations into military rations wherever possible. A small biscuit fortified with soy flour has proved useful as a highly nutritious field ration where economy of weight and bulk is essential. Soya is also part of a premixed cereal preparation. The dehydrated soup powder containing soy flour which

Should Summer Breakfasts Be Different?

Summer weather does not change basic nutritional needs. The number of calories required for energy, and the quantities of proteins, vitamins, and minerals needed for nutritional well-being are not materially different in the summer than during the remainder of the year. In fact, for the best of nutrition certain minerals and perhaps B-vitamins are required in greater amounts during hot weather. The recommendation, that breakfast be from ¼ to ⅓ of the day's total food, is as important in the summer as in the winter. During the hot season foods which are easily digested are those to be preferred.

Cereal breakfast foods (whole-grain, enriched, or restored to whole-grain values of thiamine, niacin, and iron) are therefore especially valuable in the summer breakfast. They are easily digested, and they contribute many important nutrients: carbohydrate that is quickly converted to energy, proteins, B-vitamins, and minerals. A breakfast of fruit, cereal, milk, bread and butter—the so-called "basic breakfast pattern"—is particularly advantageous in hot weather: it supplies about 600 calories; if more is required, the portions may be increased, and/or other suitable foods are easily added, without making the breakfast more "heating." In every summer breakfast a cereal should be included.

The presence of this seal indicates that all nutritional statements in this advertisement have been found acceptable by the Council on Foods and Nutrition of the American Medical Association.

CEREAL INSTITUTE, INC.
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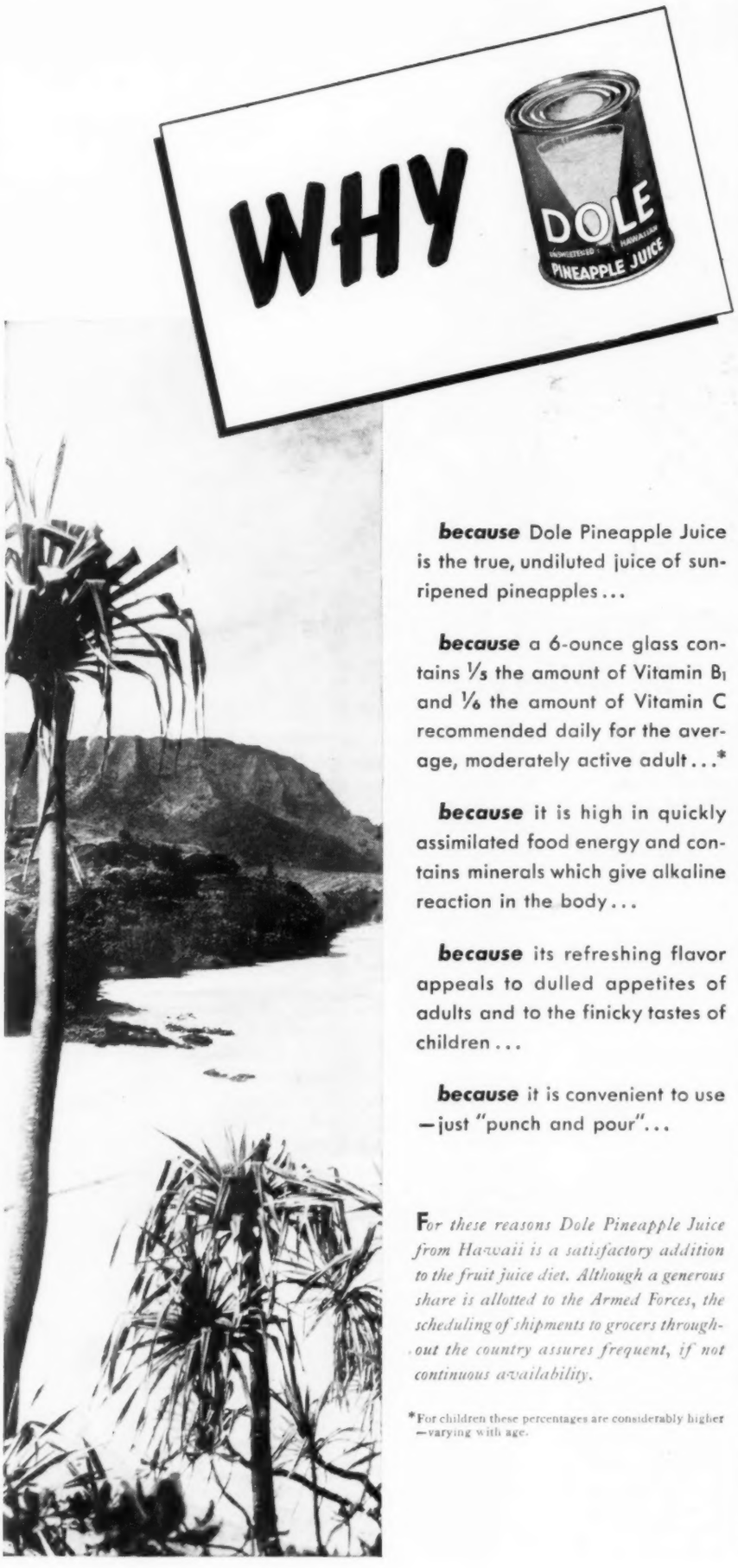

because Dole Pineapple Juice is the true, undiluted juice of sun-ripened pineapples...

because a 6-ounce glass contains 1/5 the amount of Vitamin B_1 and 1/6 the amount of Vitamin C recommended daily for the average, moderately active adult...*

because it is high in quickly assimilated food energy and contains minerals which give alkaline reaction in the body...

because its refreshing flavor appeals to dulled appetites of adults and to the finicky tastes of children...

because it is convenient to use —just "punch and pour"...

For these reasons Dole Pineapple Juice from Hawaii is a satisfactory addition to the fruit juice diet. Although a generous share is allotted to the Armed Forces, the scheduling of shipments to grocers throughout the country assures frequent, if not continuous availability.

*For children these percentages are considerably higher —varying with age.

is prepared for lend-lease supplies is so concentrated in food value that a bowl of the soup is a meal in itself. Other foods, such as sausage and meat loaves, have their protein content bolstered by the addition of soy flour or grits.

The American palate is not sufficiently familiar with the full, unmodified taste of soybeans to have developed a real appreciation of them as yet. This taste differs from that of our more commonly used dried beans in that it has a heavier, stronger quality. The processing methods which are now used to make the soy flour and grits serve to mellow this taste so that it is much more bland. It is often said to have a "nutty" character which is delightful in preparations made of the proper proportions of soya and other foods.

For baking purposes, the soy flour or grits, used alone, give a heaviness of consistency to the baked goods which is undesirable. Therefore, these products are used to best advantage as partial replacement of the customary amounts of flour required by the recipe. In the "get acquainted" stage, at least, these substitutions should be small—perhaps only to the extent of 10 per cent. The amounts can be varied later to suit the taste. It is most advisable when first trying the soy flour to follow closely one of the many carefully tested recipes. Soya products are at their best in fortifying foods or substituting for the staple protein foods of our diet. They should be worked into the menu at every opportunity. With such usage we can take advantage of the remarkably high protein, vitamin and mineral content of this valuable food.

There are available numerous publications on the use of soybeans either as the fresh green vegetable or as dried beans. One can readily learn how to make at home several varieties of soy foods from these dried beans. The so-called soya products such as flour, grits and flakes are still different types of soy foods. Many carefully tried recipes are to be found describing the use of these flours in foods of every type and purpose. Entire meals may be prepared using soya in every course. These recipes can be obtained from government pamphlets of the Department of Agriculture, from bulletins from many state experimental stations, through state home economics extension services and from several of the companies which prepare soya products. There are also inexpensive books written by nutrition experts which are devoted in part or entirely to soybean recipes.

BABY IS ONE YEAR OLD TODAY!

He has begun to take a wider variety of foods, but fundamental, as his "staff of life," is his daily milk quota.

Because of low curd tension, ease of digestion and palatability, he will delight in taking a part of his milk ration in the form of Horlick's simply prepared with water.

Horlick's prepared with milk is rich in muscle- and tissue-building proteins, as well as bone- and tooth-building calcium.

Horlick's is obtainable at all drugstores.

Use

HORLICK'S

The *Complete* Malted Milk—Not Just a Flavoring for Milk

HORLICK'S

Women in Medicine

(Continued from page 495)

ficial review of her contribution demonstrates that she is worthy of the many honors bestowed on her.

Since fatigue is related to health and health is the opposite of illness, our attention may now turn to a few of the diseases which have baffled the medical profession. For generations one of the diseases mothers dreaded most was scarlet fever—not so much because a child was uncomfortably ill for a few days, followed by a long period of isolation, but chiefly because of the aftermath. From the time the rash first appeared until the child was fully recovered the mother feared the effect on certain vital organs, an effect from which, often, the child never recovered entirely. For this reason mothers, especially, are grateful to Gladys Henry Dick and her husband, George Dick, for their many years of painstaking research.

Gladys Dick is an attractive woman with a sparkling mind. Although she has lived in Chicago for many years, she calls Nebraska home. Shortly after completing her medical education at Johns Hopkins University she and her husband began investigating scarlet fever. The thing they were seeking proved to be elusive, and it was many years before they succeeded in isolating the organism—hemolytic streptococcus—which is responsible for the disease. Not satisfied with this achievement, however, they developed a test for susceptibility, a method of immunization and an antitoxin for treatment. Only when one has been associated with great numbers of scarlet fever patients can one fully appreciate what these discoveries mean. Largely through the valiant efforts of the Dicks, the incidence of scarlet fever is declining.

Alice Hamilton is another middle westerner whose pioneering is in large measure responsible for the conditions under which women work today. Because of her efforts, women today escape many of the deplorable working conditions which men took for granted thirty-five years ago.

Alice Hamilton spent her childhood and girlhood in Ft. Wayne, Ind. Before taking up the study of medicine at the University of Michigan, she spent two years at Miss Porter's school at Farmington, Mass. Later, she studied abroad and at several American universities. When she assumed the position of professor of pathology at the Woman's Medical School in Chicago (later absorbed by Northwestern University) she established her residence at Hull House. With the residency went responsibility for one or more duties in connection with the work of the settlement. Dr. Hamilton's was the washing of Italian babies on Saturday mornings, a task she enjoyed hugely.

One day Dr. Hamilton read an article dealing with specific industrial poisons in connection with certain trades in England. She was greatly interested because she had seen at Hull House several patients with what she thought were "trade poisons." At that time legislation in the United States was limited to a federal law prohibiting the use of white phosphorus in the making of matches. The field of "trade poisons" was practically unexplored. In 1909 the governor of Illinois appointed her to head a commission to investigate and study occupational diseases in the state. Illinois was the first state to appoint such a commission.

DR. HAMILTON realized that legislative control of health hazards was necessary, but she had the good sense to see that the first step was the assembling of evidence on which legislation could be based. With this in view she began her survey. It was largely confined to Chicago. It included the lead trades, brass foundries, steel factories, glass works and dry cleaning establishments. She had no instructions, nor any legal authority to enter a plant. She had to make her way as best she could. She found a great difference in managers; many were proud of their factories, totally ignorant that anything might be wrong; others were suspicious of a woman poking around where no woman had any right to be; still others were not sure that all was well but did not know what to do to correct the suspected evils. In making her report, Dr. Hamilton was careful to frame it so that no one could identify a factory. She also bore in mind her father's teaching never to make a statement that could be questioned unless she were ready to defend it. Of necessity, this first survey was hasty, almost primitive in character compared to those which followed. Later, she made it her business to learn all she possibly could about a trade before beginning an investigation.

In 1913 I was fortunate in hearing Dr. Hamilton lecture on occupational diseases. She was fresh from her first survey and talked about it freely. I recall that she was most generous about giving credit to any one who had helped the cause. She said this first investigation revealed that seventy-seven different occupations had given rise to cases of lead poisoning in the previous two years! At this time she divided hazardous trades into four groups: those which were dangerous because such poisons as lead, arsenic, phosphorus or turpentine were used; those which were dusty, and sometimes chemically harmful as well; those in which the presence of excessive heat or moisture, or both, was the hazard; and those which induced excessive fatigue.

Her work in Illinois brought Dr. Hamilton fame. Soon she was appointed special investigator of poisonous trades for the United States Department of Labor. This was followed by her appointment as assistant professor of industrial medicine at Harvard Medical School, the first chair for industrial medicine in the country. (It was also the first appointment given to a woman by that school.)

In the years that followed, Dr. Hamilton met challenge after challenge. Protective laws were not passed overnight in forty-eight states. She took pride in the accomplishments of her students and supported their legislative efforts both by speaking and writing. Although Dr. Hamilton retired in 1935 she has served since that time as a medical consultant for the Department of Labor in its division of labor standards.

Probably every woman fears cancer. Cancer ranks second among the causes of death in this country, and cancer is more prevalent among women than among men. Two women have contributed importantly toward our understanding of this scourge.

One of these is Maud Slye, who for many years has been a member of the department of pathology at the University of Chicago. Dr. Slye has done extensive research on mice in an effort to determine the relationship of heredity and cancer and the laws governing malignancy and its localization. She chose mice for her studies because many generations could be studied in the span of one human life. She has bred strains free from cancer and strains which carry cancer from one generation to another. In 1937 she called attention to the nine generations of mice from which breast cancer had been eliminated. In human life, this could mean freedom from breast cancer for over six hundred years. In some strains she had obtained exemption throughout twenty-seven years; translated into

EMPLOYEES of the York Safe and Lock Co., York, Pa., hold an impromptu conference on better hearing as Sonotone Consultant W. W. T.....* (*right*), himself a Sonotone wearer, explains the measures his company is taking to insure *uninterrupted* hearing in the present war-time emergency.

To these men, as to thousands of others in war plants, better hearing is vital. A. T. K.....* (*left*) is back at work on a war job only because of his Sonotone. C. L. B.....* (*third from left*), with the Company for 25 years before hearing trouble interfered with his work, is back on the assembly line, wearing a Sonotone, and has had two promotions. And F. Q.....*, Jr., famous as a photographer, feels his engineering job in the power drive department depends upon his Sonotone.

Like these men, there are thousands of others in America's war-time plants who depend upon Sonotone's nation-wide service organization to keep them at their victory-making jobs. But there are at least half a million others—trained, skilled, useful men and women—who could do a better job for America if they could hear better—but who have always hesitated to wear a hearing aid for fear it might brand them as "deaf".

To service these men and women who need help, Sonotone has built up a little army of hundreds of Consultants, but the increasing interest in better hearing and the pressing need of rehabilitating thousands of battle-deafened men from our armed forces opens many new opportunities for those who would like to devote their lives to helping others hear better. Any interested person should go to the nearest Sonotone office for information on the free training and the future opportunities this fascinating, heart-stirring work offers.

*Name omitted in accordance with medical principles.

There are over 150 Sonotone offices. The office nearest you is listed in your local telephone directory. Phone for information or write SONOTONE, ELMSFORD, N. Y. *In Canada: write 229 Yonge St., Toronto. In England, 144 Wigmore St., London, W. 1. Also available in the world's principal countries.* Ask for a free copy of "Hearing Through the Years". Available only in the United States.

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human life this would total about 3,000 years. While she does not fail to recognize the influence of trauma and irritation, Dr. Slye believes that "if specific types and sites of tumor can be ruled out of mouse families, they can be ruled out of human families." However, she is "willing to admit that any step to actually breed out cancer may be far ahead."

The other woman who made a noteworthy contribution to our knowledge of cancer is Marie Curie, whose life has recently been made the subject of a moving picture.

Her early education was received in Poland, but she was not able to get there the grounding in science that she wanted. The way opened for her to go to Paris. One cannot read about those first years in Paris and remain unmoved. She was poor. She was alone. She struggled to keep herself free from all entanglements in order that every waking hour might be spent on her studies. She aimed at perfection and as a result carried away many honors.

The full story of the Curies has been told many times. The world knows that they discovered radium —a discovery made more or less accidentally. The story goes that following the discovery of x-rays other scientists became interested in rays. Another scientist found that uranium salts emitted rays of an unknown nature. This phenomenon intrigued the Curies. They began testing one element after another to see if any others possessed similar characteristics. The instrument used was the electroscope. Its leaves of fine goldfoil are charged with electricity and indicate the strength of the activity of any radioactive substance. Testing a sample of pitchblende, from which uranium is extracted, Marie found that the radioactivity was four times greater than she had expected. She checked her experiment again and again before she decided that some new substance was responsible for this increased activity. Soon she found that she was dealing with not one but two unknown substances. One did not prove too difficult to isolate. In July 1898 the Curies announced that a new element had been discovered, an element they called polonium, after Marie's beloved Poland. The second unknown was more difficult. It is one thing to know that one is dealing with a hitherto unknown element and quite another thing to set it apart so that it can be seen, weighed and measured. Although the Curies had given this new element the name of radium, skeptical chemists said, "No atomic weight, no radium. Show us some radium and we will believe you."

Days, weeks, months, years of experimentation followed. The Curies worked under almost unspeakable conditions. They were sustained by their staunch belief that this new element existed. Fortunately, they possessed tenacity, curiosity and stubbornness. In 1902, forty-five months after the announcement of the probable existence of radium, Marie was able to prepare a decigram of pure radium and determine that its atomic weight was 225.

Thus the Curies demonstrated that pure radium can be isolated. They soon found, however, that radium has a great affinity for oxygen and is easily oxidized by air. What is commonly spoken of as radium is chloride of radium, in appearance resembling crystals of common salt. It is so powerful that it is kept in a glass tube, wrapped in tinfoil. Lead is impervious to its rays.

Its first medical use was in the cure of warts. After radium showed its effect on warts it was tried on more dangerous growths, and finally on cancer.

Recognition came slowly to the Curies, but when it came it came like an avalanche. The Nobel Prize, dinners, receptions, honorary degrees and election to membership in the most exclusive scientific societies followed in rapid succession. Probably no two persons ever cared less about such honors. They begrudged even the little time they permitted these honors to take. They wanted more than anything else to be allowed to return to their laboratory and carry on their investigations and teaching.

Following the tragic death of Pierre Curie, a journey was made by Marie and her daughters to America to collect from the President of the United States a gram of radium, a gift from the American people. This journey was a tour of triumph. The universities of the country vied with one another to bid Mme. Curie welcome and to shower her with degrees. I was privileged to see Northwestern University award her the degree of Doctor of Science. The vast auditorium was breathless when the weary looking woman, dressed in black, came forward. She accepted almost with indifference, as though she were present in body but absent in spirit.

On her return to Paris she again took up her work in her laboratory. But her health was broken. On July 6, 1934, she died quietly. As her daughter said, "She did not know how to be famous."

The Unfolding Miracle of Blood

(Continued from page 503)

determining the minimum amount of sodium citrate necessary to act as anticoagulant in blood.

On November 14, 1914, Dr. Luis Agote was able to announce to the world that 0.2 per cent of sodium citrate in human blood would prevent coagulation. At last the indirect transfusion of blood from donor to patient was really practical and safe. The blood, however, could not be kept more than a week.

Blood transfusions were given their tryout during World War I, but the trials and the results were so limited that they could not be compared with the similar work in this war. But mass production transfusion projects were in the wind. London launched the first real blood donor service in 1921 and reduced the cost per transfusion to $2.25. This, of course, was whole blood to be used locally and immediately. In the early 1930's Dr. Yudin of Moscow conducted extensive experiments and finally announced a method of preserving and storing blood for thirty-five days.

In 1937 Cook County Hospital in Chicago, after testing Yudin's method, launched the first real blood bank with "deposits" of whole blood, plasma, red corpuscles, convalescent serum and the blood of pregnant women to be administered to premature babies. The hospital operated the project on true banking principles. A patient needing a transfusion received one from the bank. Thereafter, friends or relatives donated a sufficient amount of blood to make up the deficit. Blood of all types was available instantly; the necessity for calling in emergency blood donors was eliminated. The bank system is in general use today.

The first wholesale use of stored, citrated blood occurred in the Spanish civil war and confirmed the success of the method. In fact, doctors were amazed to find that, in emergencies, the formerly delicate task of blood transfusion could be entrusted safely to orderlies.

In 1936, Dr. John Elliott of Salisbury, N. C., reported the clinically successful use of liquid blood plasma —the colorless liquid, separated from the blood, that has proved such a wholesale life saver. In 1940 Dr. Strumia of Bryn Mawr Hospital demonstrated the use of dried plasma, thus making it as accessible as a bottle of aspirin.

The London blitz forced the use of plasma. With casualties mounting and medical supplies taxed beyond belief, the British turned to the United States. We couldn't send preserved blood — it doesn't keep long enough. But we could send plasma, and even more dried plasma. Thus, less than four years ago, the first large scale plasma project was launched by the American Red Cross. Early in 1941 the drive was intensified for our own armed forces.

Since then over 5,000,000 pints of blood have been donated—an astonishing record in view of the fact that during the preceding twenty-five years only 15,000 transfusions of stored blood were administered in the United States.

But in the vast unfolding miracle of blood, plasma and citrated blood form only one part of a greater picture.

When war loomed in 1940, the National Research Council and the American Red Cross called on Harvard's Dr. Edwin J. Cohn, one of America's foremost physiochemists, to head up a large scale plasma research project. Dr. Cohn and his associates decided to concentrate on plasma fractionation: a method of breaking down the life fluid and exploring the clinical function of each part — albumin, fibrinogen, globulins, etc.—individually.

First triumph to emerge from the Harvard laboratories was serum albumin—a new, compact blood substitute which does the job of plasma in treating wound shock. For the Navy, and certain Army forces, the great advantage of this new antishock agent is that only one fifth as much albumin is needed for transfusion as when whole plasma is used. Today, seven plants are turning out thousands of albumin units daily. Navy Surgeon General Ross T. McIntire recently stated that serum albumin is working wonders for the wounded in the Pacific battle area. It is also a godsend to our lightly equipped commando and air-borne troops.

Next the Harvard researchers tackled the globulins — those elements in the blood which harbor the disease-fighting antibodies. Most average donors have stored up in their blood a mixture of antibodies, acquired during years of successful disease fighting. Why not isolate these antibodies and put them to work fighting disease on a wider human front?

The good news today is that the first attempt in this direction has been successful. The measles globulin, in which antibodies of the disease are concentrated ten to twenty-five times, quietly licked three epidemics last winter and is now being produced in huge quantities for the protection of our armed forces. Globulin studies are already under way on other infectious diseases: mumps, scarlet fever, diphtheria, whooping cough. The future possibilities of the project seem limitless.

Meanwhile amazing things have been accomplished with the plasma components which have clotting functions. Both thrombin and fibrinogen can be pulled out of plasma, purified and concentrated in fine white powders. Joined in solution, and known as fibrin, they coagulate. Starting with these two substances, scientists at Harvard have been able to fabricate films, foams, plastics and glues to be used in the most delicate surgery.

Fibrin is now used as a substitute for an injured dura, the membrane that covers the brain. In civilian cases, the natural dura must be invaded to remove brain tumors; but in warfare, head injuries often damage or destroy it. To protect the exposed and highly vulnerable region, surgeons at Boston's Peter Bent Brigham and Children's hospitals have adopted the fibrin film with notable success. Smooth, strong and elastic, it is first immersed in water, then is easily fitted over the rounded or irregular parts of the brain. Experiments indicate that eventually the body builds up a pseudomembrane which entirely replaces the blood fibrin film.

Fibrin foam has proved to be a miraculous blood clotter. Particu-

REINFUSION OF RED BLOOD CELLS

The possibility that blood donors may be enabled to give their blood more frequently is indicated in a recent preliminary report on the reinfusion into donors of the red blood cells that are left after the plasma has been separated from the blood. Co Tui and A. M. Wright, New York, F. C. Bartter, Brooklyn, and R. B. Holt, Washington, D. C., say that the new technic offers the possibility of increasing the frequency of blood donations to the point where the entire plasma requirements of the armed forces might be obtained from a vastly smaller number of persons than is now possible under the system of eight week intervals between donations.

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larly in delicate nerve surgery, where there is continuous bleeding from innumerable points too small to be stopped by clamps, the spongy fibrin foam is plastered onto the oozing points. The bleeding stops instantly.

Dr. Tracy Putnam, famed neurosurgeon of New York's Neurological Center, is using a new specially treated cotton—oxidized cellulose—soaked in thrombin. Since this cotton is soluble, it can remain inside the system after the operation. Like fibrin foam, it is completely absorbed by the body fluids. After a few hours, healing is complete and no trace of the cotton remains.

As a glue, fibrin has been a boon to skin grafting—a surgical art which will be sorely needed in repairing many war casualties. Formerly doctors had to rely chiefly on sewing the skin grafts, keeping them in place with pressure dressings or even plaster. They encountered particular difficulty in repairing the small angled regions of the body, such as the nose and the ear, where skin grafts must stretch.

Today, army and navy surgeons merely have to spray the burned or wounded area with thrombin, then dip the skin grafts into a fibrin solution and fit them to the site. Grafts are thus anchored quickly, hemorrhage is controlled and dressing made easy—sometimes without the use of any stitching at all. Even in such difficult spots as the webs between fingers and toes, the new skin can be glued on with the body's natural substance, blood fibrin.

Latest and most amazing use of a blood by-product, of course, is the employment of the red blood cells. The idea of replacing only the red cells was tried during the last war by an American medical officer, Captain O. H. Robertson, at a British casualty clearing station. The trial was made on twenty wounded soldiers with surprising results. His experiment was the only service red cells saw in World War I. In 1937, during Spain's civil war, two Spanish pediatricians tried a batch of red cells in treating anemia with excellent results. The following year Drs. John Scudder and Earl S. Taylor at New York's Presbyterian Hospital were the first in this country to transfuse red cells on a relatively large scale, 277 cases. Until recent months, this residue of plasma production—representing about 46 per cent of whole blood—was discarded as worthless. Probably two million pints of cells have gone down the laboratory drain pipes within the past few years. Chief reason—aside from the fact that few doctors knew what to do with the abundance—was that these extremely sensitive cells disintegrate quickly.

Yet this extravagance irked at least one thrifty medical man, Dr. Warren B. Cooksey of Detroit. Shortly after he opened the blood bank at Harper Hospital, he realized that many people who needed whole blood transfusions were going without them, while tons of red blood cells that their bodies needed were being squandered daily. Seeking a way to keep the red cells alive, he tried resuspending them in simple saline solution. The ordinary salt water kept them intact for a period of about five days.

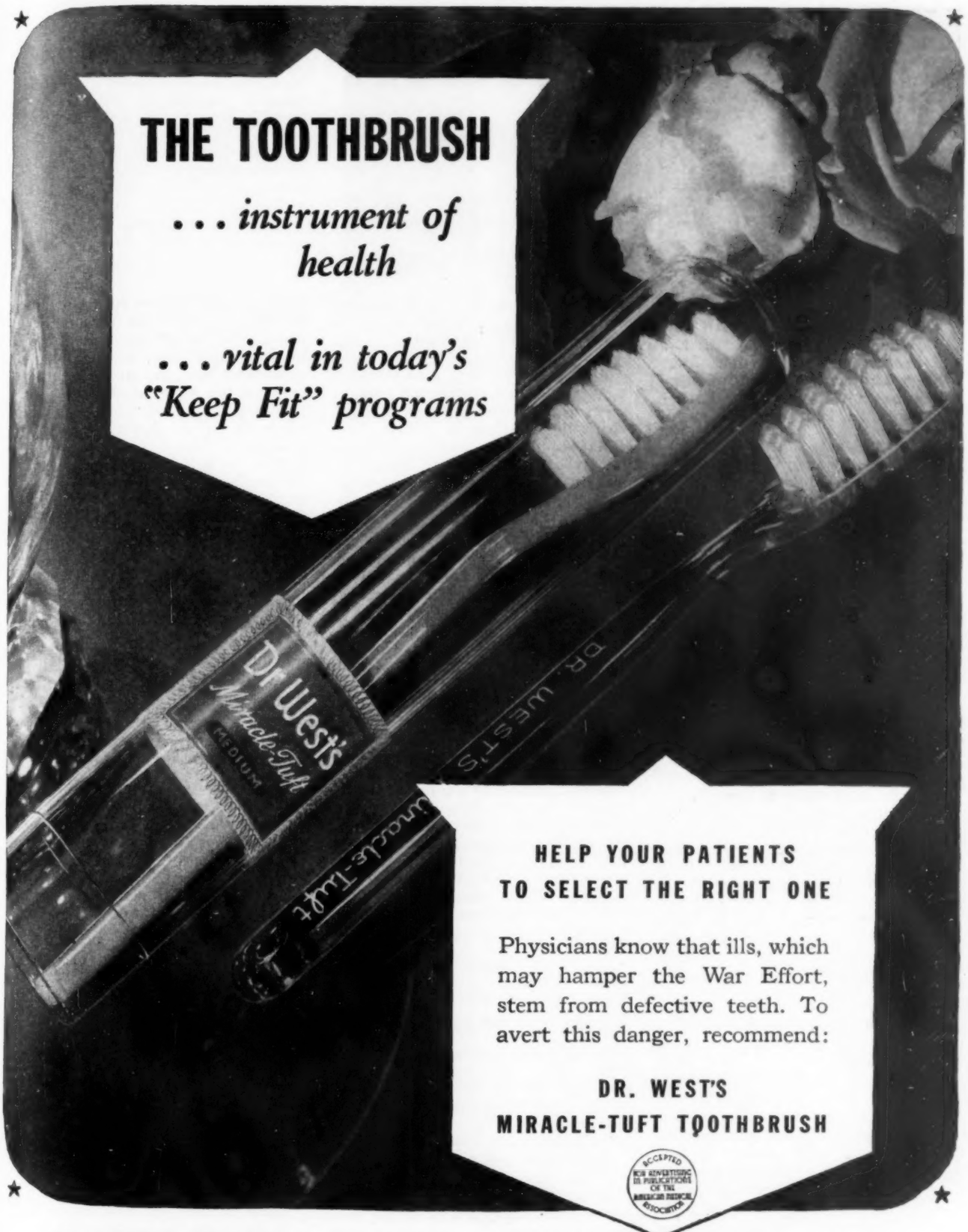
Dr. Cooksey tried his cellular transfusions on 200 anemic patients and was convinced that his patients derived as much benefit from red cells as from whole blood. Thus, last year, the Detroit Red Cross Blood Donor Service started dispensing bottles of resuspended red cells to hospitals in the area.

Detroit's plan will soon be nationwide. The Army and Navy will have first claim on the output of the red cell transfusion services, then the civilian hospitals. Already red cells rushed to hospitals are proving effective in treating cases of anemia both before and after extensive surgery, and they are also being used to combat a roster of diseases ranging from acute arthritis to tuberculosis.

But the red cell story doesn't stop with transfusion. Last year Drs. John J. Moorehead and Lester J. Unger of New York discovered that the cast-off cells were invaluable in treating infected wounds, burns and ulcers. They applied coats of red cell "paint" to open lesions, saw the pus clear away, pain disappear miraculously and the healing process speed up.

While the lifetime of the red cells in the Cooksey solution and the Moorehead-Unger "paint" is limited, doctors at the Mayo Clinic have developed a red cell powder that will last indefinitely. Mayo doctors dusted this red powder daily on a 5-inch wide varicose ulcer that had defied other treatments for eight years. The ulcer healed completely in eight weeks. They have obtained good results also in dusting the powder onto amputation stumps, chest wounds and other conditions that were not mending normally. The red cells did the trick.

With a continuing source of donated blood established after the war, blood may become an all-purpose healer. The most buoyant promise lies not alone in the vital plasma itself, but in the extra dividends of its production. The by-products hold the chief clues to future wonders in the unfolding miracle of blood.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QUESTIONS AND ANSWERS

"Broken Heart"

To the Editor:—I have heard people state that some one "died of a broken heart." Is that possible? Is there actually a physical change that takes place in time of grief, or is it wholly mental?

California.

Answer.—"Broken heart" as it seems to be used here refers to a severe emotional state resulting from mental shock or worry. It is a well known fact that emotional upsets of severe degree may aggravate existing physical defects such as various types of organic heart disease. This emotional burden superimposed on an already damaged heart may be "the straw that breaks the camel's back." Cardiac death following emotional stress in a person with an otherwise normal heart is extremely unlikely.

Allergy

To the Editor:—Could you kindly inform us if there is any known cloth that could be used in the manufacture of pillow covers and mattress covers for persons that are allergic to feathers and cotton felt? We have had several inquiries for these covers and just don't know what would be helpful. Any information you can give us will be greatly appreciated.

Illinois.

Answer.—The cloth used for the manufacture of pillow or mattress covers for the protection of those who are sensitive to feather, cottonseed and house dust is made by impregnating a good grade of poplin with a synthetic rubber. This special cloth, under present conditions, is not available for this purpose except to companies which have been manufacturing such covers before the war. Even to these companies strict rationing makes available only a limited supply of such cloth.

The Council on Physical Therapy of the American Medical Association will furnish a list of accepted products for this purpose.

Manufactured covers obtainable today may not be satisfactory because of poorly constructed seams. A well made cover should have well stitched French seams which have been taped so that no leakage is permitted. The opening through which the mattress or pillow is inserted should also be well made so that it can be securely closed to prevent leakage of allergens from mattress or pillow.

Treating Burns

To the Editor:—Permit me to suggest that you publish an article or articles on: 1. The squeezing of boils and furuncles. 2. The scraping of a burned area with the fingernail as a part of the "cleansing" process.

Recently it has been my experience to witness a supervisor of nurses scraping a 12 hour burned area of the face with her fingernails to free burned, partially loosened, blackened skin; and more recently to see her assistant squeezing a small boil on a man's cheek. As I had no authority over these nurses, I could not make any suggestions as to the proper treatment of the conditions. Both these nurses are comparatively recent graduates of nursing schools.

M.D., Illinois.

Answer.—It should be said at the outset that such a deplorable display of ignorance or indifference is not characteristic of well trained nurses. Nurses' training schools uniformly make every effort to teach nurses not only what to do, but what not to do. Great care is used in selecting students, and the better nursing schools turn away large numbers of applicants.

Every well trained nurse knows that if she is conscientious, she practices the utmost care to avoid introducing infection into an area such as a burn, in which the continuity of the skin is broken. Such areas should be touched only with sterilized instruments or dressings or with hands covered with sterilized gloves. Breaches of technic such as are described in the above letter should at once be reported to the supervisor of the nurse responsible, or if the offense is committed by the supervisor, to the hospital superintendent, the attending physician, or the hospital staff.

The practice of squeezing boils tends to break down the wall of resistance which confines the infection to a local area. Squeezing obviously favors the spread of infection into deeper tissues or through the blood and tissue (lymph) circulation.

Even in time of scarcity and shortage of trained personnel, such lapses in good technic as are complained of give the institution a bad name as well as threatening the safety of the patient. They need not and should not be tolerated.

Sensations

To the Editor:—How can a sensation of heat be a result of cold, hot and pressure?

Illinois.

Answer.—Sensations of touch are not the response of a single impulse but really a combination of warmth, cold, pressure and pain. Depending on the degree of each of these four elements present, there are varying degrees of sensation to give feelings of touch. For example, a given object may feel not only round but smooth and cold.

Body Chemistry

To the Editor:—I have read that chemists have found by chemical analysis of nerve tissue that because of increased acidity, the calcium content of such nerve tissues is dissolved and magnesium oxide is infiltrated to take the place of the dissolved calcium.

The same author states that since magnesium oxide is a poor conductor of nerve energy, when such nerves are infiltrated with magnesium oxide they fail to innervate the muscles to normal capacity and that muscles poorly innervated fail to function in a normal way, whether they are muscles of the heart or any other muscles.

Kindly let me know if biologic chemists are in harmony with these statements.

Also kindly let me know if the theory I have worked out meets the support of biologic chemists in the field of medical thought. It is this:

When hydrochloric acid is given by mouth, it causes alkaline salts to be liberated from the food molecules in the cells to neutralize it. After neutralization there is a surplus of alkalinity when the dose is given three times a day.

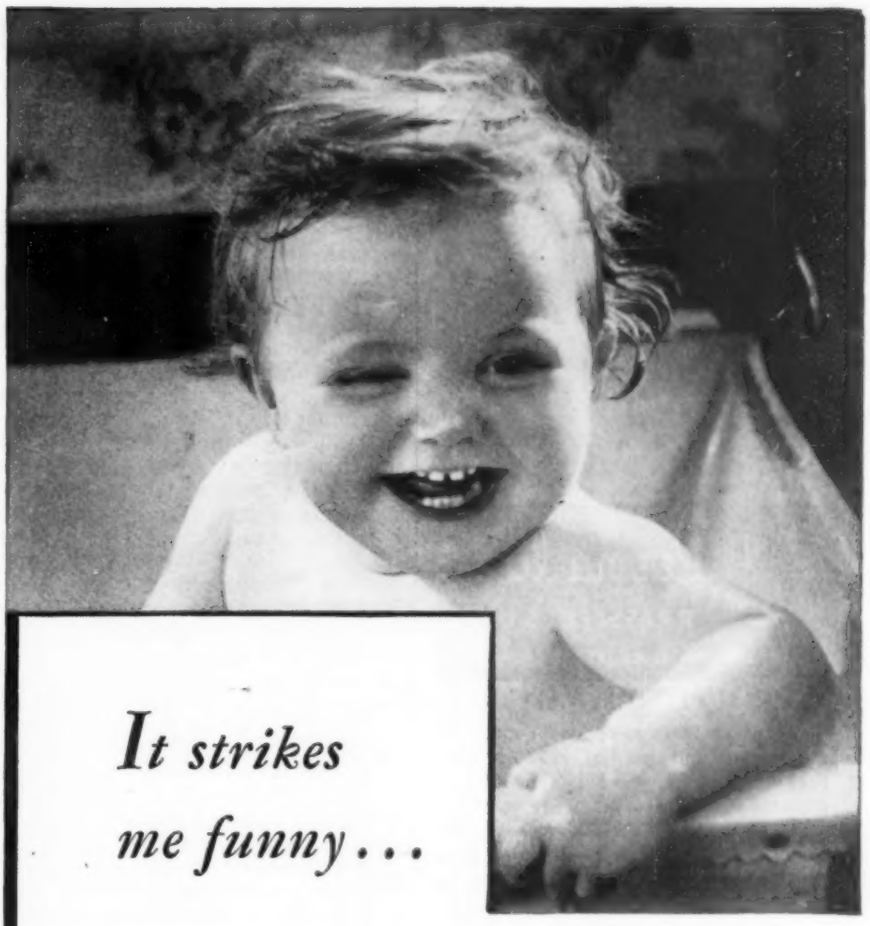
I worked out this theory because if too much alkaline salt is given, bad results may follow, and if not enough is given, no results may be expected.

California.

Answer.—There is some evidence in the scientific literature that magnesium ions may compete with calcium ions for a place in certain organic compounds. It is well known that magnesium depresses the nervous system and may act as an anesthetic. It is antagonized by calcium in a striking manner. The mechanism of action in this case is not known. It is also true that magnesium will reduce the irritability of nerve and interfere with its connection to muscle. There is nothing about these facts, however, that would support the idea that the body could become acid enough to have the calcium dissolved out of the tissues and be replaced by magnesium. The idea that a great many diseases were due to infiltration into nucleoproteins and replacement of calcium has not, so far as can be determined, had any experimental backing.

When hydrochloric acid is given by mouth, it is neutralized by the salts in the food, by mucin and by bases from the blood. This neutralization would not result in a surplus of "alkalescence" but in exactly the opposite—a decrease in the alkali reserve and a tendency toward an acid condition—that is, acidosis. No ordinary amount of acid, either administered by mouth or produced in the body, is, however, sufficient to disturb greatly the normal reaction of the body. Acidosis does occur in disease and after the administration of certain drugs, but under all regular physiologic conditions it is neutralized in several ways without changing the bodily reaction to any significant degree.

If you have a question relating to health, write to "Questions and Answers," HYGEIA, enclosing a three-cent stamp. Questions are submitted to recognized authorities in the several branches of medicine. Diagnoses in individual cases are not attempted nor is treatment prescribed. Anonymous letters are ignored.



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Hospital Ship

(*Continued from page 511*)

for the nurses began at 7 a. m., when breakfast was served in their dining room. On duty by 7:30, they received reports from night nurses going off. When the doctors arrived about 8 o'clock, the nurses were ready with informal reports on their wards. Then everything began in earnest: surgery, x-ray examinations, special gastric tests. It was the nurse's responsibility to keep the log, a permanent record of each patient.

Ordinarily the most pleasant hours of the day were at 10 o'clock and 2:30, when "nourishments" were given out. Every man who was well enough could have a quart of ice cream a day, a treat that seemed unbelievable to men who had been living on tropical isles or stationed on small ships. If they wished, they could substitute milk shakes or soft drinks. At 11 o'clock the steam tables were rolled out and it was time for chow. One nurse was trained as a dietitian and was responsible for special and soft diets and mess for walking patients. Food was good, and the men could have as much as they wanted. It was procured in various ways. If the *Solace* could contact a supply ship, it got frozen meat, vegetables and fruit. At stops like New Zealand, the supply officer bought fresh fruit, milk and frozen fruits and vegetables. Because the ship was equipped with a huge storage space, large quantities of perishables could be carried. However, if they were at sea for a long time, there was an ample supply of powdered milk and canned goods.

Nurses took turns having their lunch and enjoying their rest periods after lunch. During the afternoon "nourishments" the chaplain arranged entertainment. By the second day he usually had located patients who could sing, play guitars or banjos or tell jokes and had arranged for each to perform. He set up phonographs; radios were taboo on ships that sailed near enemy waters. Red Cross kits containing toilet articles were given out and magazines distributed. In general, afternoon was the time for relaxation. Patients took naps, stripped for sun baths or did special exercises to strengthen injured muscles. The nurses circulated about, writing letters to the men's families, giving back rubs and listening to stories of the Pacific battles. They took seriously their role of nurse to men far from home and did not mind doubling as mother, father confessor, cheerer-upper. The ambulatory patients did their share by organizing games and doing small errands for those who were flat on their backs.

Chow was at 5 p. m., after which it was quiet period for the huge floating hospital. Doctors made leisurely sick calls at 7 p. m., stopping at each bed to inquire whether the patient was comfortable or whether he would like to have something extra. Sedatives were given to the very ill. When the captain considered the ship was in a safe area, movies were shown. Otherwise every one gathered in wards to sing softly, play instruments and talk idly. The boys would compare addresses and look for home town friends. It was a twilight hour such as close knit families enjoy at home.

Before lights out was ordered, eggnogs were passed. When darkness came and silence settled, searchlights were turned on the huge red crosses painted on the ship's sides, and red neon lights were flashed on. During Lieutenant Shaw's tour of duty, she saw no submarines and the ship was never attacked. Several alerts were sounded and life jackets were ordered, but although they heard the distant roar of what experts identified as Jap planes, they did not come near enough to be frightening.

Mental cases occupied most of the time and thoughts of Lieutenant Shaw, who was assigned to the mental ward. It was her job to help cure their mental sickness by helping them to relax, by catering to their whims, by changing their discontent to happiness. When they were brought on board, so weak that they had to be made secure on their stretchers, they were asked which berths they liked best. Some wanted a dark corner, some demanded a spot near a port hole, some wanted an upper berth, some a lower berth. After they had been given a delicious meal, they were permitted to "gripe," to air their troubles. Nine times out of ten, Lieutenant Shaw said, their gripe was that they did not want to come aboard, that they were not wounded and that they wanted to stay and fight.

Many neuropsychiatric patients, Lieutenant Shaw pointed out, had been on ships in the fighting zone for months, engaged in firing guns hour on hour. They would seem to be bearing up well under the strain, but gradually they would become more and more irritable and emo-

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tionally upset. The sound of firing would become intolerable, it would continue to ring in their ears long after the battle had ceased, and they would talk about it in their sleep. When the officers noticed evidences of the increasing strain, they would quietly transfer them to sick bay and onto shore as quickly as possible; then to the hospital ship.

Lieutenant Shaw recalled one trip that carried eleven such men. All had collapsed after months of continuous fighting; some in island engagements, others on ships which had been dodging the enemy day and night. None of them had visible signs of wounds, but they were as ill as if they had pneumonia, Lieutenant Shaw explained. They did not care to talk or eat. They would sit and cry; then tell their nurses that they did not know why they were crying and that they were ashamed of their weakness. Some would go into sudden panics at the thought of going home to face their families.

The psychiatrist would order the treatment, which often consisted merely of letting the men lie in the small ward on top deck where they could see the blue sky, feel the warm sunshine and breathe the stimulating air. At other times he would order medication for the purpose of relaxing them. This was given by mouth, if possible; if not, by injection. After several days of eating good food and lying in good beds, the men usually wanted to talk, and when they did, they were allowed to talk themselves out. The nurses let them bring up the subject of the war naturally and when they fretted about having to explain their nervous symptoms to the folks at home, they were reminded of the strain they had endured and were told that theirs was a natural emotional reaction to war, which would not last.

Lieutenant Shaw now is advising the families at home to follow the same procedure—to treat the men as though they were the same individuals they used to know before the war—to let them bring up the subject of the war naturally and discuss their breakdown naturally, whenever they bring up the subject.

To a lay person, the idea of a hospital proceeding to function during high seas and violent winds is what gives a hospital ship its fascination. Strangely enough, the medical and nursing staffs learn to ignore that phase, Lieutenant Shaw said. The ship would head into hurricanes, especially in the Tasman Sea, when winds howled and waves washed high over the bow and the ship tossed about. A frightening sight to the novice! But the doctors would undertake surgery as calmly as if they were in their operating theater at a medical center, and the nurses would stand by, bracing their feet as they handed over the proper instruments. Lieutenant Shaw insists that the surgeons learned to calculate the heaving of the ship as they did their delicate repair work. Once the captain offered to reduce the speed, but the surgeons thanked him for his offer and went on working while the seas rolled and the waves crashed. They grew so expert that they could take foreign bodies from men's eyes while the ship was turning upside down.

As I listened to the experiences of a nurse on a navy hospital ship, Lieutenant Shaw made me realize the complete cooperation of every person who worked on the ship. It was a continuing drama in which every one worked toward a single objective—the well-being of the patients. The doctors praised the nurses, the nurses praised the doctors and they both joined in praises of the hospital corpsmen who were their apt pupils.

"By the time I arrived on board the *Solace*, we had received many new corpsmen as replacements for the experienced ones who were assigned to duty at Pacific stations," Lieutenant Shaw declared. "These men, although they did not have the technical knowledge of the doctors and nurses, expressed such admiration of the fortitude of the fighting sailors and marines and were so humble about their own part in the war, that they tended to buck up the patients.

"We were a happy family. The heroic sick and wounded were the link that bound us together, making us a highly efficient unit in the chain of healing the Navy has provided for men fighting under its command."

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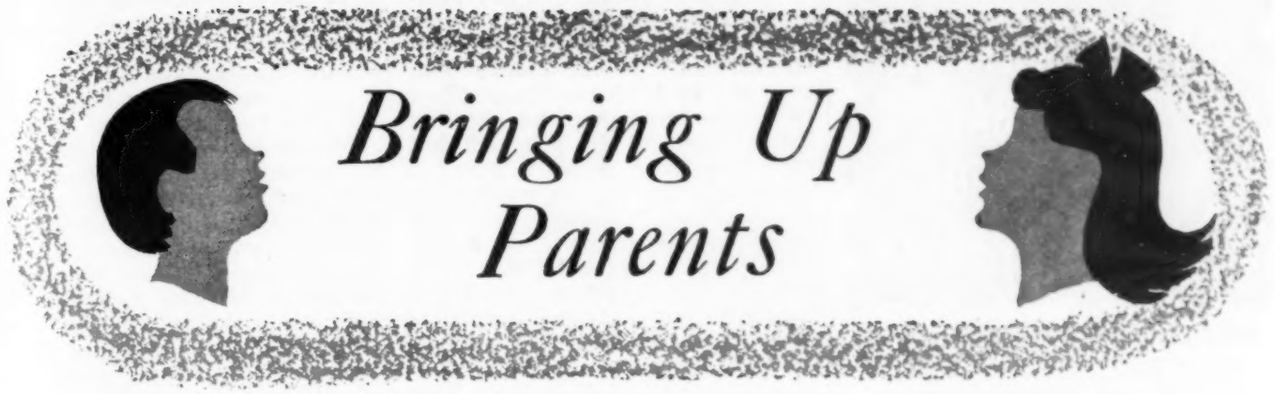

Bringing Up Parents

By C. W. WYCKOFF

Some general suggestions for parents of children from two to fifteen years old, covering the important periods of growth during these years

ONE of the prime duties of a physician is the interpretation of body functions and mental behavior in simple, understandable terms. The child's body and mental behavior are considerably different from the adult's; hence special interpretation to the parent is required to create the best possible human product.

We adults have all gone through childhood to maturity, but while we have had the experience of growing up, unfortunately the knowledge of how to treat our own children is not derived from that experience. Too often, the experience is completely forgotten.

In choosing the title for this article, it seemed to me that we hear too much about "bringing up children," and that the parents have been neglected. They start their family life with a brand new infant; then in two years or so they may have another—and another, and they don't realize what all this reproduction of the human race and rearing of children mean. Hence it may be helpful to write something on bringing up parents. The writer is far too modest to pretend that he has all the answers, but these suggestions are humbly offered in the hope that they may make you a more capable parent. In the short space allotted for this article, naturally only a small bit of the subject can be covered. Nevertheless, a few generalities on the various periods of children's growth through adolescence can be helpful to most parents.

The yearly growth of children is fairly constant from 2 years up to puberty; a four to six pounds increase in weight per year and two to two and one-half inches increase in height per year are considered average. The diet should be intelligently balanced and arranged for the growing body. Parents frequently ask if the child can eat everything the parents eat. The correct answer is, "No, *you* should eat everything that the child can eat." This applies to the essentials in the daily diet. There are many food items which are nonessentials on the family table but are tasty and have an appeal to the adult, who may need to have his appetite whetted. The child does not require such catering. He still has some of his instinctive food likes, and he should not be given such adult dissipations, for instance, as spices, mustard, fried foods, freshly baked foods, foods cooked in fat and other delicacies.

In considering the growing child's diet at any age, it is necessary to know and to have those foods containing proper and ample amounts of minerals and mineral salts for the body. These essentially are calcium, phosphorus, iron, copper, chlorides, iodides and several others. They are supplied in milk, raw vegetables, fruit skins, whole grain cereals and sea foods.

Next is a requisite amount of fat in the daily food—in an easily assimilated form, not in fried food. Fats in the body furnish a storage supply to maintain the body in health. The body has the wonderful ability to break up this fat in time of physical strain and stress into sugar and thereby keep bodily processes going on. Thus a certain amount of fat deposit in the body forms a health bank—furnished by milk, cream, butter, vegetable oils, fat on meat and cod liver oil.

Then there are the necessary protein foods which supply needed elements against the wear and tear of body growth and use. These furnish the nitrogen compounds, which are complicated and difficult to understand. They supply the necessary material for brain and nerve tissue, blood and muscle tissue and the various organs in the body. The proteins are furnished by milk, meat, fowl, eggs and vegetables such as beans

The fourth essential dietary element is the so-called carbohydrate food, which is comprised of starches (such as potato, breads and cereals) and the various sugars. These help build up the fat supply, but mainly they furnish the daily supply of so-called muscle steam of vital energy. This class of food is easily and quickly burned up or metabolized by the body and converted into force.

The fifth necessary dietary item is that of roughage or the "tooth and jaw exercisers" and the "intestinal broom." This means coarse food. Unfortunately, when the cooking of man's food was instituted some 2,000 years ago and his food was softened, it was the beginning of the loss of his precious teeth. But we can never go backward, so we must improvise some helpful technic; we must have some rough food with plenty of cellulose

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at each meal. Raw fruits, raw vegetables and coarse grains provide this roughage. These should be instituted early in the child's diet, even at 7 or 8 months of age, when its instinctive biting and chewing habits start. Then you will not have, sometime later, a gagging, vomiting child when a small piece of unstrained food passes down its throat. This chewing of harsh, rough food is a great boon to tooth preservation; it increases the blood supply to the jaws, and it also increases the flow of digestive juices all along the intestinal canal.

The sixth and last essential item in the diet is the vitamin content. Naturally this has always been present—or we could not exist. However, in this day of processed foods, the vitamin content may be largely destroyed. A vitamin is a certain chemical element contained in foods which acts like the electric spark in a gasoline motor. Vitamins help keep our vital processes clicking in the proper cadence. There is the vitamin A found in our fat foods, which is beneficial for the skin and mucous linings and related tissues such as the hair, nails and eyes. Next is vitamin D, beneficial especially in facilitating proper bone and dental growth; this is found naturally in cod liver oil and in the ultraviolet rays of the sun. Then comes vitamin C—so necessary for the tissues just underneath the skin and mucous linings. This prevents rickets and scurvy, and anemia. It is found naturally in orange, tomato and grapefruit juice, in potatoes and many other raw foods. Lastly, there are the different B vitamins, found naturally in the germinating hearts of cereal grains, in fish eggs, in yeast, in hen's eggs. These vitamins have to do with the making of blood cells, toning up the nervous system and stimulating the digestive system.

In a properly arranged and intelligently balanced daily diet the various vitamins are usually obtained in sufficient amounts to meet the bodily requirements of the growing, healthy child—with the exception of vitamin D. This must be added in the form of cod liver oil every day for all children, from birth to at least 10 years of age.

Second in importance after proper diet is sufficient sleep and body rest for the developing child. This is not only the period for tissue repair after daily use but also the greatest period of actual growth. For the young child from 1 to 6 years, a twelve hour sleep at night—from 7 to 7 o'clock or 8 to 8, and a two hour nap from 1 to 3 p. m. are absolutely necessary. From 6 years to 14 years, the sleeping period may be slowly reduced from twelve to ten hours. Young, growing children should always have their sleeping hours at night, never later in the day than 8 a. m.

Naturally, the sleeping room should be quiet, the light from without subdued. The bedroom door should be closed. The child must have its own bed; the room should be well ventilated but not drafty. In the winter just having a cold bedroom with the windows closed does not mean fresh air. If the weather is extremely cold, there may be some heat in the room, but the windows should always be open. There should be no radio turned on to make the child go to sleep. For a peaceful, refreshing sleep the surroundings should be quiet and serene. The body may toss and turn many times during the night, perhaps two or three times an hour, but this is normal and gives the different muscles an opportunity to stretch and grow.

Without the proper sleep, not only is the child's physical growth handicapped, but mental acumen is decidedly retarded. The child is cross, quarrelsome, disobedient, pale, lacks appetite and may become a "problem child."

Infants and young children up to nursery school age are more or less sheltered from all diseases, and while they do become ill occasionally, they should not have illness nearly so frequently as the school age child. It is unfortunate, but our children must go through a "tissue toughening" period and combat the various childhood diseases. Repeated colds and various infections gradually develop a storage of so-called antibodies in the blood stream which remain with us throughout life and protect us against constant bacterial onslaught. It is much better for the adult if he has been subjected to the contagious diseases in his early childhood. At this time the body can better tolerate these diseases. They are not nearly as severe as they may be in later life. These diseases seem to be a necessary physical price we must pay for civilization. Some day they may all be prevented, but until that day comes, what can't be cured should be endured—and at the proper age.

It was not many years ago that nearly every young child had his tonsils and adenoids removed with the idea that colds, infections and contagious diseases would thus be lessened. It was slowly and painfully learned by the medical profession and by parents that nature really did have a purpose in placing tonsils in the opening to the throat.

They act as a fortress against disease invasion, as a first line of physical defense. If the tonsils become too overfilled with invading bacteria, the next line of defense steps in and takes the germ overflow—that is, the lymph glands about the neck. In this way, these disease-causing bacteria are killed before they gain access to the blood stream and lymph channels, and by this means the so-called antibodies are formed against bacterial disease.

In this marvelous scientific age preventive inoculations have been found against smallpox, diphtheria, lockjaw, typhoid fever, whooping cough, scarlet fever and many of the tropical infections, so that much of the grief and anguish endured by the parents of a few years ago has been erased. Unfortunately there are always a number of parents who refuse to have these so-called poisons injected into their children. Until such parents can be made to see the light, they need our pity and our constant vigilance lest they cause disease among us.

The growth of the normal child is not measured in terms of weight or height or intellectual ability, but in terms of harmonious physical, mental and emotional development and consistency in the developmental progress. The infant's body goes through more profound changes than it will ever encounter again in so short a period of time. When considering standards of growth, we must bear in mind that there are several body types. Children's bodies more or less follow their ancestral architecture. Some are lean and lengthy, some are short and stocky. You cannot force feed and attempt to fatten or lengthen the temperamental little human animal as is done with placid domestic stock.

At about the time of puberty, special hazards arise due to the altered character of growth. The thyroid or pituitary or sexual glands may not function well. Because of his immature tissues, the adolescent fatigues easily, is more apt to be irritable and unstable emotionally; therefore sufficient sleep at this time of life is more important than at any other period. Also because of these immature tissues the boy or girl who takes part in competitive athletics should be examined frequently by a competent physician. Girls start to mature at from 10 to 11 years; boys, about three years later, or from 13 to 14 years. It takes from two to three years to complete the body change from a child to a sexually mature, but not of course mentally and physically mature, adult.

Parents of girls must realize that

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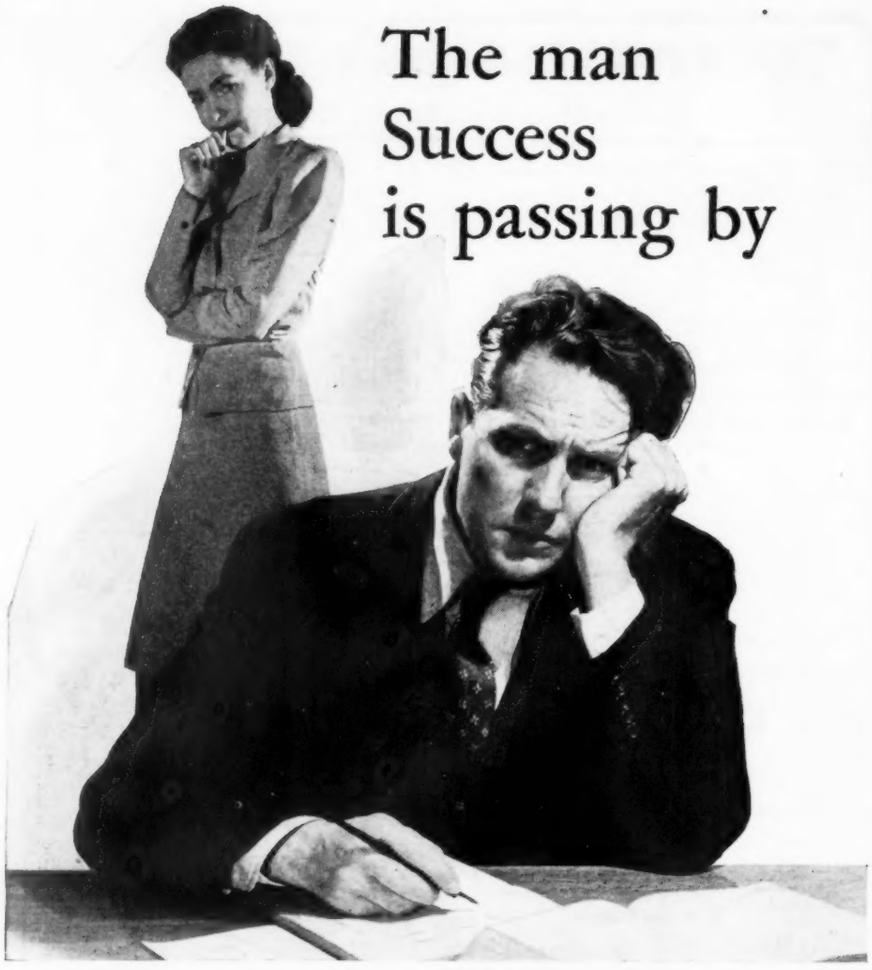

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it requires about three years for the menstrual cycle to become regulated on the lunar month basis. For many months, possibly two years, the cycle is irregular, coming once in two to six months and lasting from two to ten days. Naturally one can't expect such a complicated process to start right off with a perfect rhythm.

A normal child of any age is not a complainer and does not ordinarily discuss the body or the body's functions with his parents. The parent must be on the alert to observe the child's condition without making the child imagine illness by asking pointed questions or suggesting that the child looks badly or is nervous.

The mother will easily gain the child's confidence by always being interested in his play and work. A quiet moment when she is alone with the child is the only time for an exchange of confidences. When the young child asks where he came from or anything about his sexual organs, don't put him off with an evasive answer but satisfy him with a truthful explanation which his years can understand. Encourage him to ask further questions of you at any time, and suggest that these matters he should always discuss only with you and never with his associates, as they know no more than he knows.

Later on, at the age of 9 or 10 years, more detailed information on life questions should be started. It is usually better for the father to instruct the sons and the mother the daughters. But the father may shirk his responsibility, and the mother must tell both boy and girl about the origin of life. As the boy becomes 13 years old and during the later adolescent years, it is absolutely necessary for a man to give him sex information. The ideal person, again, is the father, especially if he has taken the time to gain his son's confidence and respect. The father may be willing but lack a knowledge of how to start talking and how to continue.

There are any number of such books, but probably the simplest and most concise pamphlets on these questions are those published by the American Medical Association in Chicago, entitled "The Story of Life." This same information also suffices for girls and is most helpful in putting the facts in proper, easily understandable language for both parent and child. In fact, the 11 or 12 year old girl or the 13 or 14 year old boy may read these pamphlets themselves. Sex questions and problems should never be a subject for table or parlor conversation.

The Iris and the Pupil

(Continued from page 522)

fatigue and danger and to develop a quick response to impressions from without and from within.

We have in the iris three kinds of nerve fibers: those which supply the contracting muscle, those which control the dilating muscle, and also the sensory nerves which serve as sentinels on duty at this entrance of light. The sympathetic nerve causes the pupil to dilate, opening the window and allowing light to enter. The third, or motor nerve, secures the contraction of the pupil, or closure of the window, restricting the passage of light to a smaller area over the center of the crystalline lens in order to produce a finer definition of the image on the retina. Altogether, this comprises what is perhaps the most nearly accurate automatic mechanism known to man. Every human being has a continuous daily experience with these functions; we never open the eyes without calling into immediate action all these complicated processes.

Dancing—in the Dark

(Continued from page 506)

To get back to our nodding poppies, look at Gloria and Shirley, the two graces Laura Blair was a little wistful about. Their problem is pretty general, too. They are the talented youngsters, the nymphs who do the solos at all the Red Cross benefits. Every family has one or knows one; unfortunately, not every family knows how to handle one.

Too often parents are taken in by flashy dancing schools that plaster youngsters with adult mannerisms and affectations and, if they are gifted, send them out to perform at every available function. This exploitation is good publicity for the school, but it develops the children into artificial insufferable little exhibitionists.

The ideal teacher for the talented child is one who is wary of too many public appearances and one who has had years of experience in building professional careers. She gives a solid, almost a relentless technical foundation; she attracts many gifted children who serve as a spur for each other; and she is usually hard boiled, expensive and inconveniently located to the residential neighborhoods! But she is worth a sacrifice of time and money in the case of really gifted youngsters.

One word of caution, however. Normal cultural and recreational interests should not be abandoned for too many dancing lessons a week. Dancers, like stenographers or bookkeepers, should not be one-sided. Furthermore, many young hearts are broken when over-trained, overambitious 12 year old fairies develop into 16 year old Amazons!

There's just one poppy left—Joan. She represents the large majority of youngsters. She has no urgent physical, social nor emotional problems, and she's no more talented than a pussywillow. Her parents want her to improve her posture and acquire a little grace. On the cultural side, they feel that she should understand and appreciate dancing as an art, just as she should understand and appreciate poetry, painting and music.

For the Joans, any teacher with good training and an integrity toward her profession as a dancer and teacher will do. She may be the best known teacher in town or the one around the corner who charges 50 cents a lesson! She may teach modern dancing, with its free, plastic movements and its emphasis on creative self expression; or she may teach tap, with the lilting swing so irresistible to most youngsters. She may open new worlds with the fascinating folk and national dances, with their lovely costumes and music of other peoples and other times. She may teach ballet, where carefully planned exercises discipline muscles and develop the lightness and coordination and balance that make walking or swimming or skating or even jitter-bugging graceful and flexible and competent.

Actual participation in all these types of work will give an understanding of dancing as an art, and two or three seasons altogether can furnish this varied sampling. It may even teach the Betsys and Shirleys and Virginias and Mary Anns to see, in the flutter of a falling leaf or the happy leap of a puppy in the sunlight, another type of dance, the beauty and poetry of movement. It is the duty of parents to see that their children are not dancing—in the dark.

Mrs. E. E. Calvin, Everett, Ohio, likes the modern Evenflo Nurser with its handy nipple, bottle, cap all-in-one.

She says her son often finishes his Evenflo Nurser in ten minutes and that he doubled his weight in the first four months.

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Swimming for Fighters

(*Continued from page 518*)

Using the recommended breast, side and back strokes, the swimmer keeps his arms under the water and moves as slowly and easily as he likes.

The better to swim through water covered with unignited oil or floating debris, the combat swimmer is taught to hold his head high and his face clear of the water, with legs dropped until the body is angled downward at approximately 30 or 40 degrees from the surface. This variation is also useful to enable the swimmer to see where he is going and what conditions he is facing. The ability to swim silently is of great tactical value, and again the breast stroke is favored, although the side stroke can also be used effectively. With the body angled downward, stroking movements are slowly and carefully made without breaking the surface. Breathing must be inaudible, too, and is done through the mouth without any spluttering or noisy exhalation.

The ability to submerge and swim under water quickly and easily is a useful accomplishment under wartime conditions. It is one way to avoid surface hazards, such as floating debris and oil, while maneuverability under the water is valuable as well for certain types of tactical operations. The beginner is first taught plain submersion, followed by surface diving. Then he learns to hold his breath until he is able to stay down a half minute or more without discomfort.

The opposite of silent swimming is swimming with a splash recovery, the only method so far developed for a swimmer to make his way with comparative safety through burning oil or gasoline. Using the breast stroke, the hands in recovery splash a fan of water forward and to the sides. The effect is to extinguish the flames and open a pathway for the swimmer.

Spectacular demonstrations, staged by expert instructors with skilled service men as the participants, have proved that men can jump from considerable heights into flaming waters and emerge alive and unharmed. Under ordinary circumstances, however, practice under actual conditions involves too much risk of inhaling flames. A miscalculation of distance, a missed splash, an unexpected cough or gasp may mean a life lost.

In many instances men are blown into the water or are forced to leave a ship after they have sustained debilitating injuries. Even these casualties have a chance, if they have learned to navigate without full use of arms and legs. The best way to swim with the legs and one arm only is to use the side stroke with a shallow arm pull, while in the event of injury to both arms, the logical way to swim is on the back, using the legs in an inverted scissors or inverted breast stroke kick.

Completing the list of fundamental skills are diving and leaping feet foremost from graduated heights. The only kind of diving taught the trainee in functional swimming is the plain front plunge, which may be taken safely from any height up to 10 or 12 feet. A plunge dive with the body streamlined—arms stretched forward with legs pressed together and extended to the rear—may carry the diver a length of 40 to 45 feet. With this head start, underwater swimming will carry him still further, affording protection from oil or debris on the surface.

When men must jump from the deck of a troop ship 25 to 30 feet in height, there is often no choice but to leap feet foremost. In case of disaster, jumps from such heights cannot be made with confidence, or controlled, if the jumper has not had some previous experience. While the learner is still in the beginning stages, he jumps from just above water level and proceeds gradually to more impressive heights.

WITH ABC's of swimming mastered, the trainee assumes his true role as a fighter and advances to functional swimming with all the props. He may have become an excellent swimmer in bathing trunks, but he has yet to experience the sensation of navigating in full uniform and with rifle or pack. Again he is allowed to adjust himself gradually to an unfamiliar situation, first practicing in breeches or trousers and shirt and gradually increasing the weight of his clothing and other paraphernalia.

Right here the enlisted man is relieved to discover a heretofore unsuspected fact. Going overboard for the first time with uniform and equipment, he fully expects to sink under a 50 pound load and the weight of his G.I. shoes. In a few seconds he finds that his pack floats and that his uniform has little weight in water. Soon he is swimming with ease, adjusting what he previously learned to the new conditions. He has twenty to thirty minutes before his pack soaks up and begins to sink.

In military operations, it is important for a man to be able to carry his rifle when he swims a stream. Having learned to swim without the use of one arm, he can hold it high and dry out of the water, ready for a moment's action. The picture of a fighting swimmer, wearing uniform, helmet and pack, with his rifle thrust out of the water, tells the graphic story of America's amphibious army.

Along with practice in jumping fully clothed, the functional swimmer is taught the safest way to hit the water wearing a life belt or jacket, a bit of instruction, incidentally, which ought to be included in life boat drills on ships in peacetime. On impact with the water, these safety garments can be the cause of serious injury if they are forced up around the neck. They should be clasped tightly to the body before jumping by crossing the arms and holding the straps.

The ingenious technics under the head of shirt tail life saving—so ably demonstrated by Corporal Odell—are the means of employing what is at hand when men are scattered like driftwood out of reach of life rafts or rubber boats. An empty duffle bag or even a pillow slip can be a life saver if one has been taught to jump and swing it over the head to catch the air. When the string is drawn, it will float like a bubble and can be refilled by any one who is able to submerge and expel a lungful of air into the opening.

One good reason not to discard shirts and trousers is that they also can furnish a support with the introduction of air to make them buoyant. To utilize his shirt in this fashion, the service man has to remember to button his collar securely and pull the front of his shirt out of his trousers, holding it down with his hand and exhaling into the shirt between the buttons. Trainees are encouraged to work out their own ways of improvising supports. One discovered a new way of filling trousers with air. Instead of swinging them over his head, after knotting the ends, he spread them out on the surface of the water, and with one hand beat air into them by slapping and splashing water in the direction of the open waistband, which was held just below the surface. It

takes only a few seconds to twist the trousers together in the middle and form a pair of water wings.

Before he learns how to make these practical supports from clothing, the trainee practices removing his clothing under water, as there are times when greater freedom of movement is the important thing. Also, a man who can get out of his clothing can easily remove a parachute harness or unlock a safety belt in case he lands in the water in a parachute or in a plane. In the same phase of training, he learns how to release leg cramps.

The emergencies for which service men are prepared in functional swimming include rescue of injured or drowning companions and artificial respiration on land. The "tired swimmer carry" is used to support an exhausted buddy who is still able to give some cooperation to his rescuer, while towing by one wrist is taught as a means of pulling a helpless companion through breakers. The third method taught, the "collar carry," is similar to the civilian "hair carry," except the back of the collar or blouse is seized without removing helmet or cap.

Thorough drills in the prone pressure method of artificial respiration are carefully supervised by the instructor, who checks on each man's performance. This is the finish of a course which can teach a man who never swam before to rescue himself under the most difficult circumstances and even to assist in the rescue of others.

Unfortunately, many men after they are inducted will never have the advantage of this training, or will have only a limited part of it. When other combat training must be expedited, or when water facilities are not available, swimming is out of the picture. Much can be done, however, in teaching men of preinduction age so that they will be equipped with at least some swimming ability before they enter service.

With this end in view, the Red Cross has launched a campaign to reach all civilians subject to military service. In an ambitious effort to train millions of our country's youth, 15,000 water safety instructors have been functioning under the direction of Red Cross chapters and in cooperation with clubs, schools, colleges and industrial and community organizations. The overall purpose is to make America a "water safety conscious" nation in peace as well as in wartime. The result in the saving of lives may well be one lasting consequence of the war which can be put on the credit side of the ledger.

Not To Be Sneezed At

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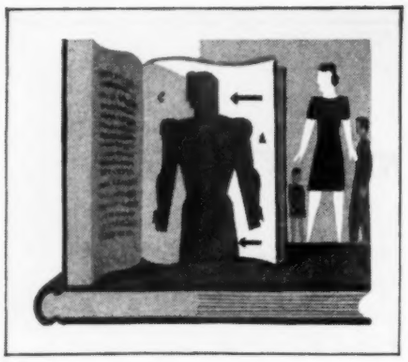

NEW BOOKS ON HEALTH

Health and Hygiene

By Lloyd Ackerman. Cloth. Price, $5.00. Pp. 895. Illustrated. Lancaster, Pa.: The Jacques Cattell Press, 1943.

This book is a successful effort to cover the whole field of health and hygiene. The bulk and weight of the volume make it a little difficult to handle except as a desk reference book.

The introductory chapters deal with the hygienic concept and provide statistics. Part two concerns the evolution of health concepts and health practices, with chapters on the cultural foundations of modern hygiene, the transition from experiential to experimental methods, and the influence of experimental science on medical thought.

Part three deals with methods of evaluation, such as statistics and the study of trends. Part four takes up definite problems such as infection, resistance, hypersensitiveness, transmission of infectious agents, destruction of infectious agents and the prevention of disease transmission. Part five deals with hygiene of the mouth. Part six discusses nutrition, and part seven the hygiene of the emotions and the intellect, with chapters on the anatomic and physiologic basis of nervous activity, types of response to nervous activity, attitudes, behavior patterns and personality traits, frustrations, conflicts and modes of adjustment; the kinds and causes of mental diseases, disorders and deficiencies; the prevention of mental diseases and disorders and the promotion of mental health; and sleep and physical exercise.

Part eight, entitled "The Hygiene of Mating," describes the phenomenon of reproduction, the venereal diseases, the ideals and goals of mating and other modes of sexual adjustment. Part nine has to do with poisons affecting the body from without, such as depressants and stimulants, miscellaneous poisons and, strangely out of place in this outline, the cancer problem. Admittedly cancer may be caused by certain external irritants, but the assignment of a discussion of the cancer problem as a subheading along with alcohol, tobacco, narcotic drugs and metallic poisons seems rather arbitrary in the present state of our knowledge.

Part ten is devoted to physical agents and their relation to health, with chapters on injury caused by mechanical and electrical forces, and on heat, light and sound in their relations to health, disease and death.

The health aspects of heart disease, high blood pressure and related conditions of middle and advanced age are scarcely touched on, though mental hygiene receives extensive consideration. Blood pressure is not even to be found in the index, and there are but a few scattered references to nephritis—these incidental to discussions of other topics.

Discussions of such controversial topics as chiropractic and osteopathy are objective and realistic, neither emotionally condemning nor attempting to placate the various cults of medical pretenders. An important and valuable feature of the book is the extensive bibliography. The book should be useful to any one who has frequent occasion to refer to fundamentals of health and hygiene. It should be especially useful to teachers or any one else engaged in health education. In the high school library it should be a valuable reference book for any one working on health projects.

W. W. Bauer, M.D.

Child Care and Training

By Marion L. Faegre and John E. Anderson. Cloth. Price, $2.50. Pp. 314. Minneapolis: The University of Minnesota Press, 1943.

This is the sixth edition of an excellent practical guide for parents. The book is soundly conceived and is specific in formulation of problems presented to parents of the normally developing child. An initial inadequate emphasis of the importance of personal relationships in the development of the child is in some measure corrected by the last chapter on "The Family." The point of view presented in this chapter could well come at the beginning of the book and could profitably be further elaborated in discussion of earliest relation of the mother to the infant.

The book well warrants recommendation to parents.

George J. Mohr, M.D.

Applied Dietetics

By Frances Stern. Cloth. Second Edition. Pp. 265. Price, $4.00. Baltimore: The Williams and Wilkins Co., 1943.

This second edition, enlarged and newly illustrated, is a valuable manual for the teaching of dietetics in health and disease. A chapter on the daily food requirements of the body includes tabulations showing the requirements for all known nutritional ingredients for which values have been established. This is followed by a chapter on the constituents of the normal diet, both in terms of food constituents and of food values. Blank forms that have been found helpful in constructing diets are reproduced. There are tabulations of total foods for the day, and these same foods are divided into groups for use at morning, noon and night meals. There is a table of typical menus of approximately the same food value but at different levels of cost. Consideration is next given to the construction of the therapeutic diet, with special attention to allergy, constipation, colitis, peptic ulcer, underweight, overweight, diabetes and numerous special requirements. Chapter IV deals with environmental factors, physical and mental, which influence the effectiveness of the diet; this chapter is very complete in its scope. Education of the patients to the use of normal diet as carried out by a clinic and dispensary is the next topic. This is a richly illustrated chapter with sketches, charts, tabulations and photographs. Then follow many tables to simplify computation of the diet. These approach the question from almost every possible point of view. They are followed by dietary outlines which go into detail as to the selection of a diet and the planning of meals for many clinical conditions. A typical example is the outline for riboflavin deficiency. This is dealt with from the viewpoint of the body part affected, the physiology, test for diagnosis, food constituents, foods, meals, environmental factors, education of the patient and abnormal conditions and diseases that may be found in association with riboflavin deficiency. Diet tables are given

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W. W. Bauer, M.D.

Careers in Public Health

By Adrian G. Gould, M.D. American Job Series Occupational Monograph No. 35. Paper. Pp. 48. Price, 60 cents. Chicago: Science Research Associates, 1943.

This brief, paper bound booklet is a condensed guide to public health as a career, covering the conventional topics: a chapter on historical development and chapters on public health work in relation to government, state and local health departments and voluntary health organizations. It discusses the opportunity for getting a job in public health work, conditions of work, salary and hours, regularity of employment and occupational hazards. A brief outline of qualifications, preparation and special training is provided. For a brief review it is surprisingly complete and comprehensive. It is factual and not propaganda in approach.

The principal objection is to the choice of pictures. On page 17 is a child being examined in the presence of many other mothers and children instead of in private. On page 19 is a picture of a nurse conducting a toothbrush drill, which has been—or should have been—long abandoned in a health program. On page 20 is a nurse administering toxoid for diphtheria, a procedure which should be limited to physicians. On page 32, beside a caption to the effect that "at infant welfare centers children receive the best medical care," is shown a nurse examining a child's throat, another function which should be limited to the doctor except in unusual circumstances. On page 29 is a picture over a caption indicating that public health workers are often exposed to communicable diseases; in this picture the nurse has two children very close to her and is taking needless risks of exposure.

W. W. Bauer, M.D.

Discovering Ourselves

By Edward A. Strecker and Kenneth E. Appel in collaboration with John W. Appel. Cloth. Price, $3.00. Pp. 434. New York: The Macmillan Co., 1943.

This is the second and augmented edition of a work originally published twelve years ago. It is a presentation of "the essentials of dynamic psychology, and the principles of psychiatry and mental hygiene" for the general reader. The present edition contains added chapters on the nature of emotion, anger and fear by John W. Appel. Presentations of conceptions of modern psychology and the mental mechanisms utilized in dealing with conflict situations constitute the bulk of the work.

This is a well organized and thoughtfully written book, among the best of those intended for the general reader. It cannot be casually read, however, and probably will appeal only to relatively mature readers. A scientific attitude and manner of presentation are maintained consistently.

Criticism of the book would involve criticism of some of the basic concepts. Some concepts, such as transference and resistance, are oversimplified, perhaps intentionally. The authors' task would have been somewhat easier had the role of conscience been more clearly discussed and had the concept of the super-ego been utilized. The chapter on anger hardly does justice to the more general problem of aggression (in its constructive as well as destructive connotations). Mental mechanisms are well discussed, but an integrated presentation of personality structure does not emerge.

This is nevertheless an extremely useful book that should be of value to educators, religious and social welfare workers and others who should be oriented in mental hygiene.

George J. Mohr, M.D.

Physical Fitness for Boys

By Ben Miller, Ph.D., Karl W. Bookwalter, Ed. D., George E. Schlafer, M.S. Cloth. Price, $3.00. Pp. 457. New York: A. S. Barnes and Company, Inc., 1943.

The critical reader may be disappointed at the numerous minor errors in English in the introductory sections. There are several words which seem to be newly coined, such as "optimumly" and "organistic."

But the real meat is presented clearly, in an orderly fashion. It includes, in detailed, tabular form, a complete outline of a program for three periods weekly and for five periods weekly. The reviewer has seen no other book which approaches this in the mass of interesting suggestions for developmental activities for an individual alone, for pairs, and for larger groups. Most of these activities can be promoted to advantage in summer camps as well as schools. Many of them require no apparatus or only simple apparatus like a wand or stick.

There is a heartening emphasis on tumbling exercises, which produce strength, suppleness and ability to handle the body with a maximum of safety under any circumstances. All these activities are described clearly and illustrated in some cases. All have high interest value.

The appendix includes descriptions and photographs of obstacle courses which would, of course, be stimulating to boys of school age, for whom this volume is intended.

In summary, this book will prove extremely valuable for persons in any way responsible for the adequate training of our boys (or even girls) for physical fitness. It is complete; it is clear; its material is well chosen; its activities will enlist the eager interest of any normal boy—and interest is more than half the battle.

W. B. Reed, M.D.

Introduction to Psychiatry

By W. Earl Biddle, M.D. and Mildred van Sickel, B.S., R.N. Cloth. Price, $2.75. Pp. 358. Philadelphia: W. B. Saunders Company, 1943.

The purpose of this book is clearly stated in the preface: "to supply a bridge between general medicine and psychiatry . . . addressed primarily to nurses and nursing attendants" with the hope "that portions of the book will be of value also to others, such as junior medical interns, theological interns, social service workers and occupational therapists . . ." Unfortunately, the title chosen for this useful handbook is misleading. A title such as "A Handbook for Psychiatric Personnel" would have conveyed a better conception of what the authors have to contribute. The practical aspects relative to the care and handling of the mentally ill patient are clearly and constructively outlined. Chapters entitled "The Care of the New Patient" and "Special Psychiatric Problems" are particularly instructive. A section dealing with psychiatry in relation to psychiatric nursing should prove profitable reading to every one closely or even remotely associated with people suffering from any form of mental illness. The chapters relating to theoretical and practical aspects of therapy could be improved if the authors had demonstrated a more comprehensive knowledge of and insight into dynamic psychopathology. However, this is understandable in view of the fact that there is at this time considerable difference of opinion even among leading psychiatrists regarding the relative merits of various types of therapy, particularly shock therapy and specific technics of psychotherapy.

The book is interestingly and entertainingly written, and if the reader keeps in mind the purpose for which it was written, it represents a valuable contribution.

GEORGE W. WILSON, M.D.

Body Poise

By Walter Truslow, M.D. Cloth. Price, $4.50. Pp. 312. Baltimore: The Williams and Wilkins Co., 1943.

This comprehensive study of the subject discusses the ideal of good body posture from the points of view of anatomy and kinesiology. The author discusses the most important and frequent departures from good posture and their treatment. He emphasizes muscle re-education and presents the importance of every day sports and games in their relation to body poise.

Good body poise is an essential of physical fitness. The war effort is helping to establish the subject in its proper perspective. The author has had not only the necessary experience to supply this information but also the ability of presenting it from a broad perspective, so that every one interested in the subject will be enlightened.

Other sports are included with brief comment. The glossary of anatomic terms explains in non-technical language. The book represents a large experience with the problems involved.

LT. COL. PHILIP LEWIN, M.D.

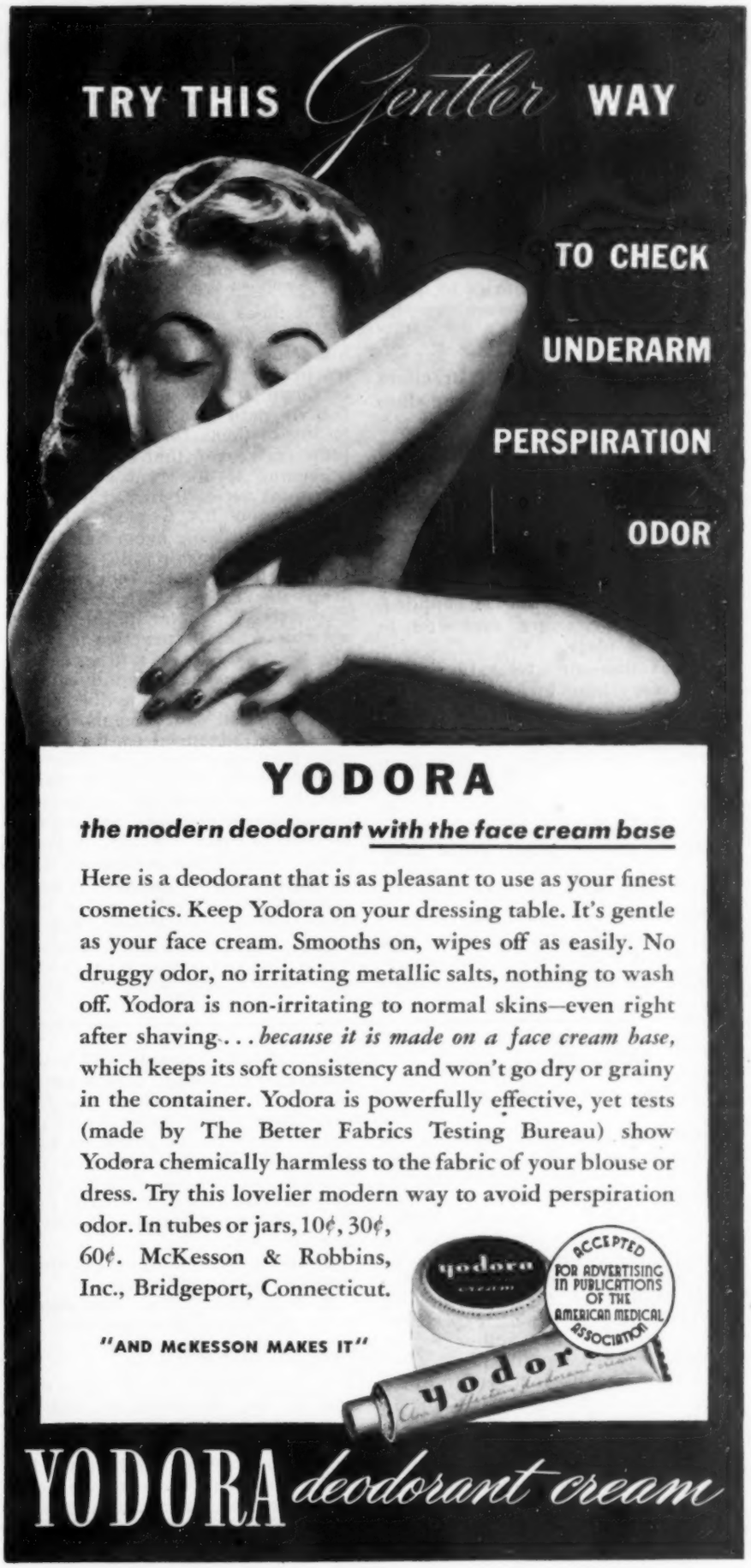
Fundamental Exercises for Physical Fitness

By Claire Colestock and Charles L. Lowman, M.D. Paper. Price, 50 cents. Pp. 165. Illustrated. New York: A. S. Barnes and Co., 1943.

The authors of this book feel that because of the present emphasis on physical fitness there is a decided need for a reconsideration of exercises and activities offered in programs of physical education. They are particularly concerned about the program of physical fitness for immature youth and the large number of students in our schools who are not members of athletic teams.

The first 36 pages are devoted to a consideration of the need for the proper group exercises and activities in developing physical fitness in boys and girls. This is the only new material in the book. The rest of the book is made up of material quoted from "Corrective Physical Education for Groups," by Lowman, Colestock and Cooper, which was first published in 1928.

The first section of this publication includes a number of state-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ments made by both military and school personnel which tend to show the urgent need for the use of fundamental exercises in developing physical fitness. Following this, the authors emphasize the necessity for intelligent planning and application of exercise. It is pointed out that considerable harm may be done to immature boys and girls through the wrong kinds of exercises. Certain types of strenuous activity cause injuries to bones and joints in immature youths. Case studies are cited of actual injuries to youth caused by unintelligent application of strenuous activities and exercises to immature and growing boys.

An analysis of certain exercises in common use is included. Some of these exercises are: "dips," "sit-up," "leg raising," "rising on heels and toes" and the "deep knee bend." It is shown that there are many instances in which these exercises should not be applied. Other exercises are suggested to take their place.

Relaxation and relaxation technics for immature youths are stressed. The cause, symptoms and effects of fatigue are discussed and methods and technics of relaxation are given.

In the second division of the book the authors present first the principles and fundamental positions of exercises. Explanatory notes and nomenclature are included. Specific methods for conducting group and individual work are listed. Also, methods are presented for restricted students and for corrective classwork for elementary, junior high school and high school students.

Specific fundamental exercises are given in considerable detail for use with both unrestricted and restricted students and for those needing corrective exercises.

LESLIE W. IRWIN

Health for the Having

By William R. P. Emerson, A.B., M.D. Cloth. Price, $1.75. Pp. 146. New York: The Macmillan Company, 1944.

This book goes back to the health teaching of the time immediately following World War I, when every teacher of "health and hygiene" had his own set of health rules and nobody paid the slightest attention to any of them, for the simple and sufficient reason that to be healthy according to the "rules" took all the point out of living. Unless one is to devote his whole effort and attention to living according to the rigid and inflexible rules set forth in this book, he cannot possibly keep the rules. There is overemphasis on regularity, admittedly a virtue when its practice is possible. Few physicians will agree that alcohol and tobacco are minor problems, as the author classifies them, in comparison with irregular habits. The claim advanced by the author that four easy rules, if observed, would release new funds of energy, banish most cases of indigestion, reduce blood pressure and prevent the major part of all sickness, simply cannot be accepted. Like all physicians, he has seen remarkable results in certain cases from improved living habits, but he claims too much on the basis of his evidence, especially in view of the "four simple rules" to which he attributes such remarkable potency. These are the rules: (1) Get plenty of fresh air and sunshine. (2) Proper food and correct eating habits. (3) Regular exercise. (4) Adequate rest. All these are undoubtedly hygienic virtues, but they are no guarantee of health. They ignore too many factors which produce disease in many persons who actually try, with some success, to live according to these or similar principles.

The most objectionable feature of the book is its devotion to regimentation. In the name of regularity, the rules prescribe some ridiculous extremes, as, for example, the advice that if one has lost sleep at night and wishes to sleep later in the morning, he must rise for his breakfast at the regular hour and then return to bed, or provide a breakfast substitute at the bedside —but under no circumstances ever miss breakfast. Admittedly the frequent or habitual skipping of breakfast is not desirable, but no sensible person with any experience will be impressed with the danger of missing one meal, even if, as the author points out, this is usually, if not always, followed in growing young people by loss of weight or failure to gain. Most readers will be willing to take the chance of a few years less at the remote end of life, rather than submit to a rigid schedule of living which takes the joy out of life.

W. W. BAUER, M.D.

NOTICE

Books reviewed in this section should be ordered from booksellers or direct from the publishers. They may not be secured through HYGEIA or the American Medical Association, unless published by this organization.

War Neuroses

(Continued from page 497)

which was ordered to evacuate its home as a protection from bombing and was directed to move to the country. In a week's time they were back, their explanation being: "We would rather be bombed to death in the city than bored to death in the country!" With due appreciation of the Englishman's aversion to boredom, experience gives credence to another explanation. It is possible that they would rather be bombed in their own home than be safe from bombs in the home of some one else. The break-up of the home relationship has proved a most potent factor in the production of war neuroses.

There are probably as many kinds of neuroses as there are different kinds of people. This puzzling ailment simply brings out, in the form of a nervous reaction, hereditary, environmental and personal factors in an attack on some intolerable situation. A sick personality cannot cope with it calmly and directly in an organized fashion. The most common forms of neuroses are:

1. Fatigue cases. These patients usually recover with rest.

2. Exhaustion and confusional cases. Some of these patients improve, and others develop more serious forms of illness.

3. Conversion hysteria. This may lead to various reactions such as fugues, twilight states and convulsive attacks. In other forms, the patient doesn't feel like himself. He suffers peculiar states of dissociation. He may succumb to hysterical paralysis and lose, temporarily, the ability to see. He may also have other disturbances of his senses.

4. Anxiety states. These may be generalized so that the patient has a deep feeling of futility but can't point his finger to the exact spot or cause. He may have special fears —such as are suffered by those who, having been torpedoed, have a fear of water. He may suffer from effort syndrome, a heart symptom without any structural lesion. While this condition accounted for a large number of pensions during the first world war, more careful medical and psychiatric tests have greatly reduced the proportion in the present conflict. Peptic ulcer and emotional diarrhea are further subtypes of anxiety states.

5. Obsessional and compulsive states, leading to such character

deviations as one sees in dramatic religiosity; the patient who, mistakenly, feels he is always being plotted against; the peculiar one who "buttons himself up" to keep away from everyday social contacts; the epileptoid character who is given to sudden outbursts of rage; the psychopath and the delinquent. There are other major types of this puzzling illness, but these are the general classifications. Broader classifications also include such ailments as chronic alcoholism.

Much stress of late has been placed on more careful screening examinations at the induction or preinduction centers to eliminate at the source actual and potential cases of neurotic disorders. Of ten million men examined for service, over 2,800,000 have been classified as 4-F (unfit for any form of military duty). The present rate of rejection is 39 per cent. Between July 1941 and January 1943, the discharges for neuropsychiatric disability were in excess of 100,000. Seventy per cent of these were screened out initially, and 30,000, or 30 per cent, were discharged for mental or nervous disorders after some time in service. More than twenty have been kept out for every one who has broken down in service. Age has proved to be a most important factor. At 45, only four out of twenty can qualify. In psychosis, inebriety and drug addiction, the rejection rate at 40 years of age is double that at 20 years. Psychoses and psychoneuroses are four times as prevalent among whites as among Negroes as causes for rejection. Thus it is evident that, at its best, preinduction psychiatric screening will leave 30 per cent who will break down in the service and provide a large group of mental casualties, the vast majority of which will be war neurotics.

The most important thing for the public to understand is that many war neurotics may fail in their community adjustment after all the initial treatment and medication by the psychiatrist unless the folks at home understand the part they should play. This is equally true of those who break down in civilian life. They, too, need a better understanding of preventive measures as well as of what they can do themselves to overcome such devastating ailments when they, in turn, are affected. Just to be genuinely and understandingly kind is the best psychologic medicine and will make a good starting point for more advanced methods in an attack on a war and postwar problem that is fast assuming major importance.

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Food and Drug Detective

(Continued from page 520)

Marshal, of any shipment of misbranded or adulterated foods, drugs or cosmetics. The shipper can contest the seizure in court, but if the Administration wins, the seized goods can be destroyed or otherwise disposed of in any manner the court wishes.

In addition to actual seizure of goods, the Food and Drug Administration, through the Justice Department, can prefer criminal charges against any one who ships a product in violation of the law. A third method of Food and Drug enforcement is to obtain a court injunction prohibiting a violator from continuing illegal practices.

FDA inspectors once trailed 72,000 cans of contaminated salmon for over six years. As long as the packer kept the salmon in his Alaska warehouse, the government could not take action. Hoping that Food and Drug would forget about the case, the canner waited six years before slipping the salmon aboard an old freighter.

With Food and Drug men on the alert at every port, the ship moved down the Pacific Coast and through the Panama Canal, ran into a Carribean storm, and was towed into Tampa, Fla. The salvage operators got Food and Drug's permission to sell the contaminated salmon as an animal food.

Months later, an alert inspector found a can of the same salmon on sale for human consumption at a Florida crossroads store. Food and Drug men combed every country store in the state to recover 50,000 contaminated cans which were later dumped into Tampa Bay.

In recent years a joint government-industry program has resulted in almost complete elimination of bad salmon. In 1941, Food and Drug inspectors used airplanes to patrol the widely separated Alaska salmon canneries, but in the last three years war conditions interrupted these on-the-spot inspections. However, the industry provided its own examiners and voluntarily destroyed all bad cans. Making their own check at Pacific Coast ports, Food and Drug officials have praised the thoroughness of the industry's voluntary controls.

Virtually all FDA inspectors are chemists as well as detectives. Generally, they get their circumstantial evidence on their inspection rounds, but most Food and Drug court cases are actually won in the laboratory, when the inspectors collaborate with expert bacteriologists, pharmacologists, microanalysts and scientists in every field relating to foods, drugs and cosmetics.

Walking through a vinegar plant one day, an inspector saw several barrels of acetic acid hidden under a canvas cover. Charged with using the acid to adulterate pure cider vinegar, the company went to court confident that there was no objective chemical test to back up the inspector's circumstantial evidence.

In a comprehensive defense, the vinegar manufacturer offered a scientific analysis of his product, the water and other ingredients going into it, and a plausible excuse for the presence of acetic acid in his plant. However, a Food and Drug witness convinced the jury by pointing out that the defense witnesses had admitted the presence of minute traces of sulphur in the finished vinegar. He explained that the sulphur was a carry-over from the dried apples which had been improperly combined with the acetic acid.

In another case, Food and Drug inspectors noted an abnormal increase in the movement of teaseed oil in the United States. In view of the wartime shortage and high prices of olive oil, they suspected that some one was using the cheaper, flavorless teaseed oil as an adulterant.

After trailing trucks, checking deliveries, and placing twenty-four hour watches over warehouses, they brought charges against a distributor of olive oil. Challenged in court to prove the adulteration beyond a reasonable doubt, a young Food and Drug chemist showed a Baltimore federal judge that the addition of certain chemicals would result in a pink mixture if teaseed oil was present.

The vinegar and olive oil cases are samples of Food and Drug's work in the field of preventing economic frauds. More important, and always first on the enforcement program, are cases involving the protection of public health. Through its seizure power, the Administration has developed an efficient, nationwide dragnet which can completely remove dangerous products from the market in short order.

In 1938 the agency ran a dramatic race against death when it traced thousands of bottles of a poisonous "Elixir of Sulfanilamide" from the manufacturer through hundreds of wholesalers and retailers. Armed with only the list of shipments made by the manufacturer, inspectors combed home medicine chests in the mountains and rural areas of the South to seize the poisonous mixture before the death toll of over one hundred could be multiplied many times.

To prevent a recurrence of the

"Elixir of Sulfanilamide" disaster, Congress has since provided FDA with the power to prevent the marketing of any new drug before its safety has been adequately demonstrated. The procedure is similar to the one which leading pharmaceutical houses have used for years under the guidance of the American Medical Association's Council on Pharmacy and Chemistry.

In 1941, doctors began reporting queer reactions from patients who had been given a certain brand of sulfathiazole tablet. An FDA investigation showed that the tablets had been contaminated with phenobarbital. The Food and Drug dragnet swung into action again and succeeded in removing from the market almost every outstanding package of the contaminated product. Since then, FDA and leading pharmaceutical manufacturers have cooperated in developing manufacturing control systems that will prevent the recurrence of similar production mistakes.

In 1942, the American Medical Association received a report that a woman had died in Atlanta after she had been given a "heatless permanent wave" during which a sulfide solution was used. The information was passed on to FDA. In less than a week not a single package of this solution was left on the market. Heatless permanent wave solutions now on the market are regarded by FDA as being safe.

To protect the nation's supply of foods, drugs and cosmetics, valued at twenty billion dollars, Congress gave the Food and Drug Administration an appropriation of $2,128,000 for the year ending June 30, 1944. This was less than the OWI appropriation for the distribution of government press releases.

Campbell's technic for getting the job done—for stretching the taxpayer's dollar—rests on the belief that the overwhelming majority of food, drug and cosmetic manufacturers are anxious to obey the law. The Administration's streamlined enforcement program, manned by only eight hundred employees, works on these principles:

(1) Screen the wheat from the chaff—separate the sincere majority from the small percentage of manufacturers who might be tempted to cut corners; then concentrate on the chaff.

(2) Compliance is cheaper than enforcement—a dollar spent on education is worth hundreds of dollars spent on court cases; don't spend money on court trials when the same degree of consumer protection can be otherwise achieved.

This is the first of two articles on the Food and Drug Administration. The second article will appear in HYGEIA next month. —Ed.

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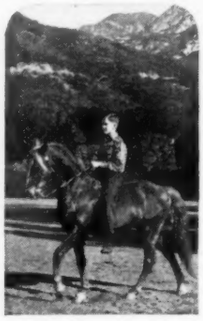

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HYGEIA NURSING BOTTLES NIPPLES AND "STERI-SEAL" CAPS

Cancer Teaching in Schools

(*Continued from page 501*)

nor the cell of a monk, nor that of a honeycomb, but a cell which is the living unit of your tissues. If an artist sketched the outline of the face of a Chinese, every one would recognize it for a man. The likeness might not in the slightest degree resemble a Spaniard. As the faces and heads of men differ, so do body cells, and yet among them all are certain common characteristics which identify them at once as cells.

"Body cells cannot be seen without the aid of a microscope. Adequately enlarged, there may be identified in each a limiting membrane, a sac, like the walls of a toy balloon surrounding a jellylike body like the pulp of fruit, suspended in which is a nucleus somewhat like the seed of a plum. Such a cell is a unit of body structure, just as one citizen is a unit of population. Every cell multiplies by division. One becomes two; two become four; four, eight; and in accumulating, they form tissues. The cells of one tissue may differ in appearance from the cells of another, as the sketch of a Greek may from that of a Navajo Indian.

"In the evolution of tissues, cells of like character grow along together as, geographically, the Danes have multiplied on their peninsula and developed it, and the British on their island. In so growing they form special and distinct organs; liver, kidney, heart and brain.

"Every cell has its own life history, as surely as every citizen in any country. Through its walls it absorbs nourishment. Chemical processes are carried on within it; growth occurs; waste is eliminated. In a peculiar way it utilizes oxygen and reproduces its kind. It works, serving a useful purpose or manufacturing a product.

"As men are farmers, chemists, electricians or architects, achieving individually or in groups certain kinds of results, so cells of like character working together produce bile in the liver; insulin in the pancreas; saliva in the glands of the mouth; and in the brain, as some claim, thought. Vastly different in appearance and different in function, cells go their orderly way, executing their normal activities for year following year.

"As cells pile up and increase, what force is at work which curbs their further development when an organ, an eye for instance, has reached a given size and shape? Why, when a kidney develops its conventional form, contour and average weight, does its growth come to an end? And why from that point onward does work become the cells' paramount characteristic, not growth? No new cells develop except in sufficient numbers to take the place of others which have worn out and died. A curious role of life holds our various parts to fixed forms and ceremonies.

"From measles to meningitis, the story of disease is that of the appearance in the body of enemies—viruses or bacteria—against which the body marshals its defenses and, win or lose, goes to battle.

"The history of a principal threat to mankind, cancer, is quite another tale, for here no new element is introduced. Apparently no cause from outside moves in. Its appearance is of another origin, and to appreciate the difference we must return to the cell and consider a perversion.

"In the social life of normal people carrying on the routine of living, now and then a man goes mad. In the organic life of tissue, occasionally a cell behaves like such a madman, escapes from restraint and goes on a jamboree. Substituting growth for work, it swiftly multiplies, and to all its progeny it bequeaths a heritage of haste. It forms a shapeless mass that infiltrates its normal neighbors, forces its way beyond fixed boundaries, finds its way into blood vessels or canals of lymph, where minute fragments break off and are carried by the streams about the body to many and new locations, there to establish their crazy growth. In invading structures, it moves often with such speed as to travel beyond the source of its nourishment. Parts of it die of starvation as a result, and in dying liberate a vicious poison.

"This lunatic career may take months or years. The origins of this urge to grow lie completely hidden. The growth is cancer."

I had an astonishing and enlightening experience. Those youngsters, at a late hour in their school-day, not only listened—they asked for more. When I left that school I knew a textbook had been conceived. Material was assembled and 5,000 copies of "Youth Looks at Cancer" were printed in May 1940. In the past three and one-half years we have turned out 40,000 copies. By careful, frequent revision we hope to develop an increasingly satisfactory text. That Yonkers lecture marked the begin-

ning of cancer teaching in schools. The "take" was immediate. The idea's growth has been astonishing.

In order more rapidly to indoctrinate the people of Westchester County, N. Y., concerning our policy of forcing cancer information into all homes in a short space of time, a four page leaflet was developed, called "Detectives Wanted." It goes to the desk of every 14 year old in Westchester County once each year, early in the fall term, and introduces the word "cancer" and many important facts concerning the disease.

Teachers may be worried because students ask questions which are difficult to answer. The Westchester Cancer Committee has solved this dilemma by inviting them to attend a short series of lectures, given by qualified biologists, which will carry teachers far ahead of their classes.

It is not expected that teachers will give a cancer course. What they may succeed in accomplishing is the introduction of pertinent cancer information in their general science teaching.

They will venture beyond the confines of restrained and normal growth into a boundless space which knows neither law nor custom, the beginning of which is shrouded in mystery and the end too often in death, with the realization that some one, some day, will know and tell—which knowing and telling will become a crowning glory of scientific achievement.

Lifting a Handicap

(Continued from page 499)

find a sedentary job in bench assembly or work at small machines. If applicants have good eyes and dexterous hands many types of sedentary jobs are available.

In placing an applicant, the counselors consider carefully transportation problems and the physical effort involved in the job operation to avoid overtaxing the handicapped person. Experience proves that there is a low rate of absenteeism among handicapped workers skilfully placed. The key lies in the fact that when a handicapped person is rightly placed, his handicap, as far as his job is concerned, no longer exists, and he competes on equal terms with other employees for compensation and promotions. Then he is able to give satisfaction to his employer and has the opportunity to become a valuable employee.

Under the present pressure for manpower, employers have welcomed the service of the counselors in analyzing job operations at the plant to see what jobs could be done by a one-handed man, a blind or deaf person, or one on crutches. With his imagination stimulated by the possibilties they point out, the employer sees many jobs which could be broken into separate operations not requiring the full physical capacity of a man. His apprehension that handicapped persons are prone to more accidents is dispelled when he learns that handicapped persons are even more careful than the average individual, for something is gone from them and they cherish what is left.

Fitting the job to the individual is exemplified in the case of the young soldier returned from Pearl Harbor so shattered nervously that, although he needed work, he could not bear the confusion of sound or the presence of other workers. He requested a job where he worked alone in a quiet place. The counselor found an employer who wanted linen checked and agreed that it could be done after hours when the other employees had gone home and the machinery was still. Only the night watchman would be on the job.

The counselor placed the young man for five hours each evening six nights a week. She believed that the steadying effect of regular, daily work successfully carried out would be the initial step in this young soldier's rehabilitation. She had confidence that he would in time be ready for many types of employment.

In direct contrast to the nervously shattered soldier is the young man, like Alex, without hands. Such a young man came into the Association office one day as a guide to a friend, for he had no idea that he himself was employable. To be sure, he had taught himself to write with his artificial hands, but he had resigned himself to the belief that he could never earn a living. When the counselor won his confidence and pointed out that another man with artificial hands had been placed in a war plant pulling and pushing levers which controlled machine operations, he, too, was referred, placed and is now busily at work.

Neighbors in each community support their association work for the Bettys and Alexes of their states through the purchase of Easter Seals, distributed annually through personal letters or sold by school children. Their financial assistance in providing special services for the handicapped means that thousands throughout the land are restored to useful citizenship within their own capacities.

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HEALTH IN THE HEADLINES

WORKING the same way flypaper does, a new oil treatment for floors, bedding and blankets traps air-borne germs in hospital wards and barracks, the Surgeon General of the Army has announced. Tests made in Army camps indicate the new germ-trapping oil treatment will reduce the incidence of respiratory infections by more than 25 per cent. The oil film may be applied to floors with a mop; bed linens and blankets are impregnated in the final rinse of laundering. The film is invisible, odorless, greaseless and non-sticky, according to Dr. Oswald H. Robertson of Chicago, chairman of a commission which has been studying air-borne infections for the Office of the Surgeon General since the beginning of the war. In ordinary wards and barracks, it is explained, the bacteria and viruses of infectious disease spread from the sick soldier to his bedding and from there into the air and onto the floor; from the floor they spread into the air again during the sweeping and policing of quarters. When floors and bedding are treated, the germs stay put. Actually, air bacterial counts are reduced as much as 90 per cent in treated areas, Dr. Robertson reports. Dividend: The invisible oil film adds to the weight of blankets, makes them warmer.

* * *

SOME 90,000 physicians in private practice wrote an average of 1,818 prescriptions apiece, not counting refills, in 1943, according to a prescription census conducted by *Drug Topics*, a trade paper. This was an all time high in the number of prescriptions filled, and, as might be expected, the money spent for prescriptions reached a new high in 1943 too, with a per capita expense of $2.08 as against $1.69 the previous year. These figures don't mean that the nation was sicker than it's ever been before, it should be pointed out. Forty million of the prescriptions filled were for vitamins.

* * *

RATS outnumber men in the world today by a wide margin, a fact which isn't surprising when it is known that female rats bear litters of from four to ten young four or five times a year and breed at the age of six months. The only difference between rats and mice other than the difference in size is that rats commonly have over 200 rows of scales on their tails, whereas mice rarely have more than 180. Two species of rat predominate in the United States: the brown or Norway rat (*Mus norvegicus*), which is large, grayish brown in color, fierce, vicious, cunning and fearless; and the black rat (*Mus rattus*), which is smaller, blacker, glossier and not quite so tough. Scientists and exterminators take note of these details as a matter of occupational interest; to most others a rat is just a creature to be despised and avoided without regard for the number of scales on its tail, the exact shade of its coat or the finer nuances of its character.

Rats work at night, taking the most direct route from their nests to the source of whatever food they are engaged in destroying. With voracious appetites, they eat man's fruits, vegetables and meats, and they destroy by pollution ten times as much as they devour. To get at food, rats will gnaw their way

through thick floors, lead pipes, doors and even brick foundations. They are stopped, however, by steel plate and heavy concrete; the resistance furnished by these materials makes it possible, happily, for rat-proof structures to be constructed.

Because rats are carriers of many deadly diseases—typhus, bubonic plague, typhoid fever, infectious jaundice and trichinosis, among others—public health authorities everywhere are interested in the removal of rat harborages, the construction of rat-resistant buildings and the rat-proofing of existing structures, the proper storage of foods and disposal of waste, and the destruction of rats through poisoning, trapping and fumigation. Most health departments assist in rat-proofing projects and rat-killing campaigns. The Health Council of Allegheny County, Pa., for example, has recently issued a pamphlet containing detailed instructions on how to get rid of rats. "Extermination of the rat is a biological impossibility," this says in part. "The best that can be done is to suppress the rat, reduce his numbers and thus control his harmfulness and destructiveness. Even this is a gigantic task, and it will result only from continuous, cooperative and intelligently applied control measures."

THE theory that children conceived during the months from August to January are more intelligent than those conceived from February to July has been a subject of study and speculation among geneticists from time to time for many years. A British scientist, J. A. Fraser Roberts, now advances the plausible hypothesis that such correlation between intelligence and time of conception as has been observed is not explained by any seasonal influence on the mother or the developing child, but rather by the fact that intelligent parents show a tendency to conceive children slightly more often in winter than in summer.

* * *

TO at least one group of medical investigators, the innocent beating of your heart would resound in deep, booming notes similar to the lowest tones of a tuba or a bass viol. That's the way Dr. John H. Foulger and physicist Paul E. Smith Jr. of Wilmington, Del., describe the sounds of the normal heart as heard through the new heart sound detector they have developed as an aid in the early diagnosis of circulatory ailments.

The pitch of the heart tones, these scientists say, depends on the state of tension of the heart muscle at the moment it contracts to drive blood through the body, and on the volume of blood on which the muscle is contracting. By detecting delicate changes in the pitch of these tones, it is explained, the new instrument reflects variations in the condition of heart muscles and circulation too slight to be noted by electrocardiograph and standard blood pressure measurements. Too many of the deeper, bass tuba notes in the heart sound record are likely to indicate a poor return of blood to the heart and slack muscles, Dr. Foulger says.

* * *

MOPPETS and their mothers who argue interminably about how long a clinical thermometer should be left in the mouth to insure accurate recording of temperature will be glad to know that the question has been settled definitively. A group of doctors recently questioned nurses at one hundred training schools all over the country, then added their own carefully controlled clinical observations. The answer: three minutes minimum, "under ordinary conditions." This is clearly a victory for mothers, who now have scientific authority to hold out when the youngsters ask, every fifteen seconds or so, "Gosh, can't you take it out *now*?"

—R. M. CUNNINGHAM JR.